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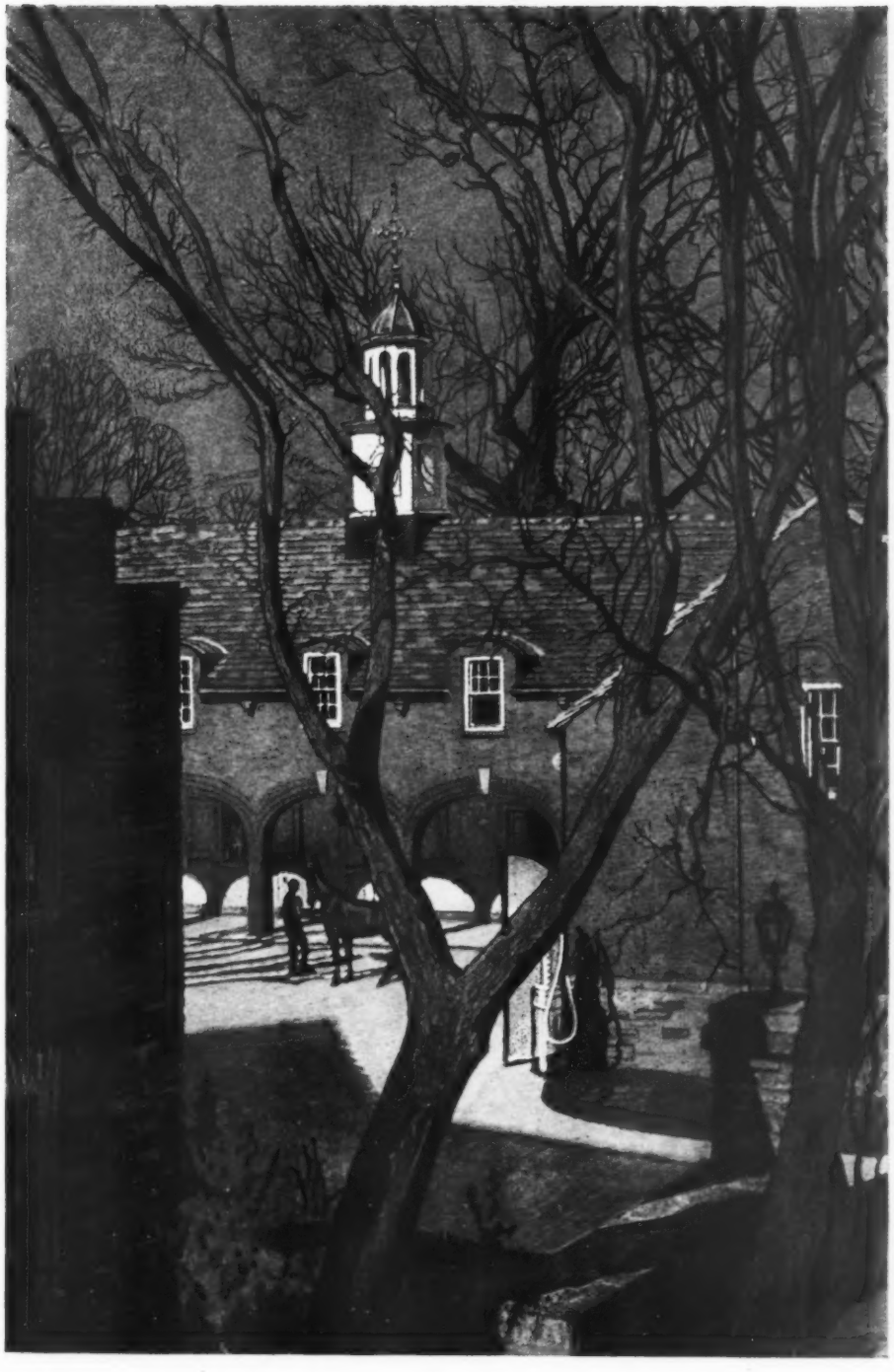

AMERICAN ARCHITECT

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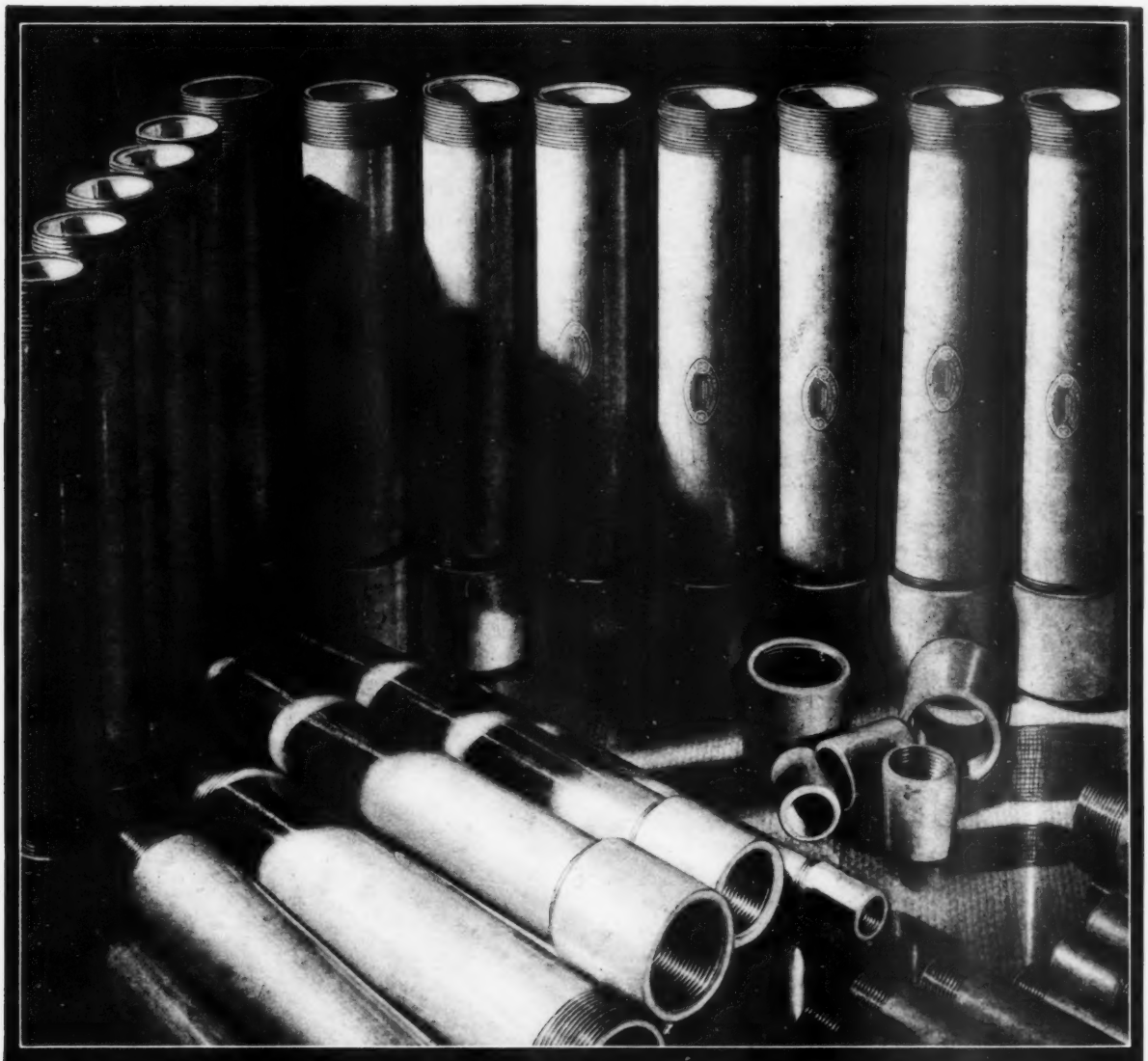

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WE WISH to direct your attention to this photograph because it illustrates an important building trend of today namely, the use of escalators to supplement elevators. These escalators handle the heavy traffic of lower floors and leave the elevators free to serve upper-floor tenants. Photograph of the new Cities Service Building, of New York City. Sixty Wall Tower. Escalator and elevator installation by Otis Elevator Company.

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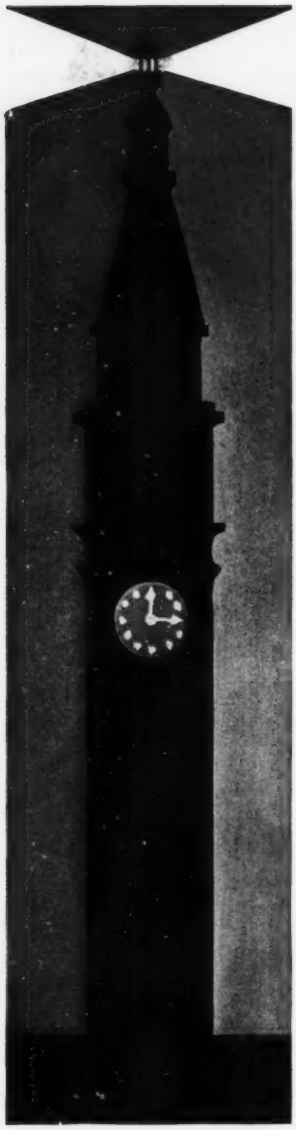

ARCHITECTS:
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The first unit of the Metropolitan Life Insurance Company's new building in New York City, now under construction. "This structure," the company states, "has been designed to provide ideal working conditions for the 8,000 Metropolitan Life employees who will work in it." 20,000 square yards of Sloane-Blabon Linoleum—sanitary, sound-absorbing, pleasing to the eye, easy on the feet—will contribute to these conditions.

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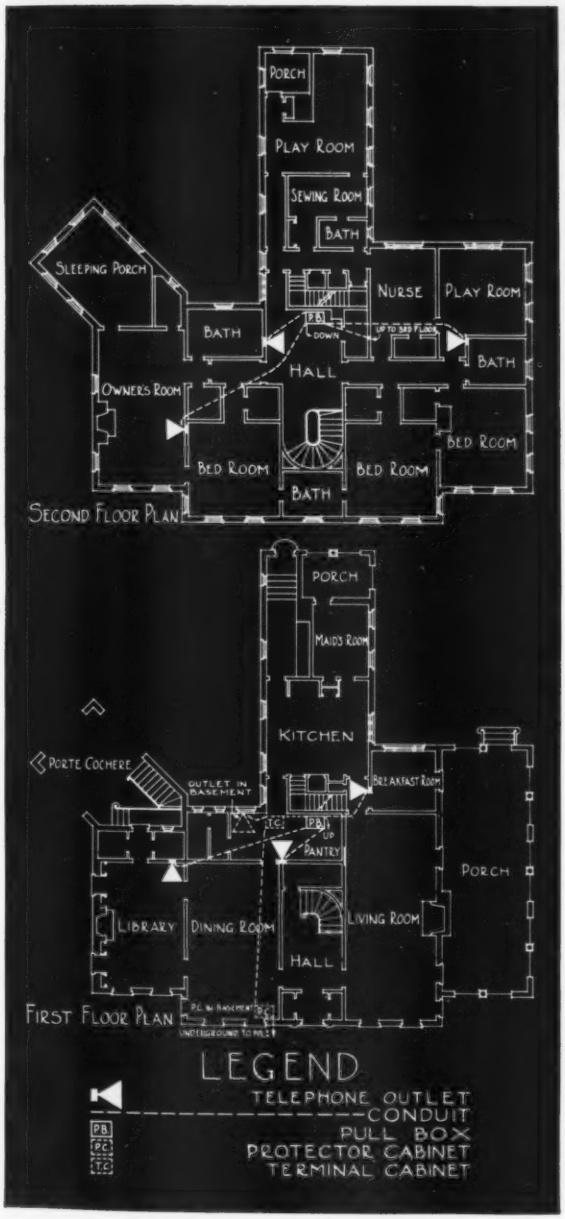

The residence of Mr. Donald Ganiard, 714 Michigan Avenue West, Jackson, Michigan, is equipped with built-in telephone conduit connecting eight outlets, including one in the third-floor hall. This provision for greater telephone comfort was made during a remodeling of the residence. CLAIRE ALLEN & SONS, Architects, *Jackson.*

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If conduit and outlets were not built in during the original construction to provide for this telephone comfort, they can be added during the remodeling, as was done with the residence above. Telephone conduit, included thus in walls and floors, conceals all wiring, protects against most types of service interruptions, and allows outlets to be located wherever they're wanted.

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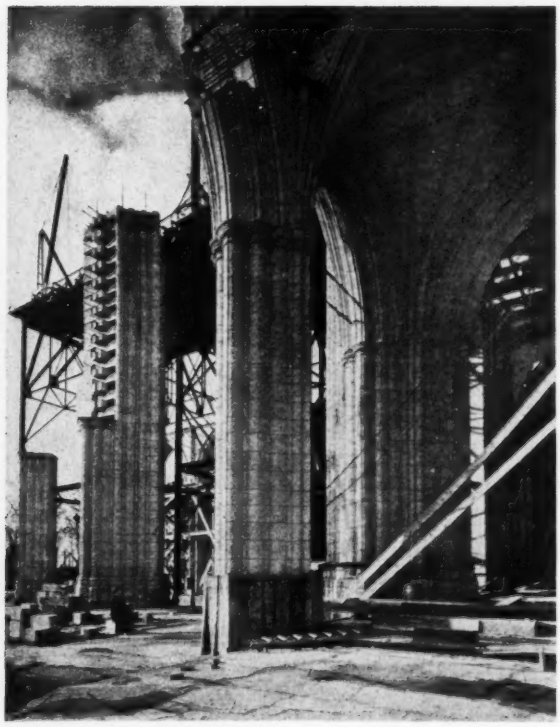


Stone Vaulting, Washington Cathedral. From "Materials and Methods of Architectural Construction"

MATERIALS AND METHODS OF ARCHITECTURAL CONSTRUCTION

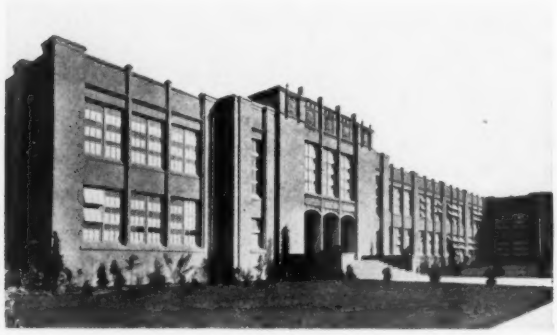
By Charles Merrick Gay, A.B., B.S., and Harry Parker, M.S. Published by John Wiley & Sons, Inc., New York. Illustrated; indexed; 639 pages; size 6 x 9; price $6.00

WRITTEN primarily as a text book for courses in Architectural Construction, this comprehensive volume will be found equally valuable to the practising architect both as a reference source and as an aid in the solution of structural problems. In Part I materials of construction are authoritatively discussed in relation to their structural use. In Part II methods of construction are similarly related to the basic materials employed. A chapter is devoted to the Mechanics of Materials. Of outstanding importance is the fact that the authors have given due recognition and treatment to accepted modern methods and materials.

METHODS AND PROBLEMS OF MEDICAL EDUCATION—Twentieth Series

Edited and published by The Rockefeller Foundation, New York. Illustrated; indexed; 250 pages; size 8 x 11; free to interested persons.

THIS volume continues the series of descriptions of medical schools, laboratories, clinics and other institutions, in which the Rockefeller Foundation has sought to collect and publish data of value to those planning improvements in buildings and methods for medical education. Plans and illustrations of many hospitals here and abroad are included, accompanied by brief descriptions of the facilities in use. While not primarily intended for use by architects, the entire series should prove helpful to those specializing in the medical field.



Eureka Junior High School, Eureka, California. From "Planning School Buildings"

A METHOD OF PROCEDURE AND CHECKING SCHEDULE FOR PLANNING SCHOOL BUILDINGS AND THEIR EQUIPMENT

By John J. Donovan. Published by The Bruce Publishing Company, New York. Illustrated; 361 pages; indexed; size 7¾ x 10½; price $6.50

HERE is a practical working check list and guide for architects who may be planning school buildings of any type. No matter how efficient an architect's office may be, the human mind is not capable of recalling and recording, unaided, the many thousands of details, large and small, which are or should be included in a school structure of any magnitude. Also it is hardly to be expected that school officials and building committees should be able clearly to state their problem in all of its aspects, without the aid of a comprehensive check list such as this.

The check list here given is carefully annotated at points where explanations and notes would appear to be helpful. Most of the pages are ruled to provide for the insertion of notes and references on a particular project, so that each copy of the book will serve as a permanent record of a single school building. Columns are provided for indices to "statement of problem," "preliminary drawings" and "working drawings."

The author had four objectives: to aid school officials and educational planners in stating their problem clearly to the architect; to serve as a counter-check to the preliminary drawings; to provide means of checking working drawings and specifications; and as an aid to the clerk of the works or supervisor of construction.

In the organization of the material, recognition is given to the various functional parts of the school plant and to the special conditions affecting the planning of class rooms, kindergartens, laboratories, gymnasiums and many other special purpose areas.

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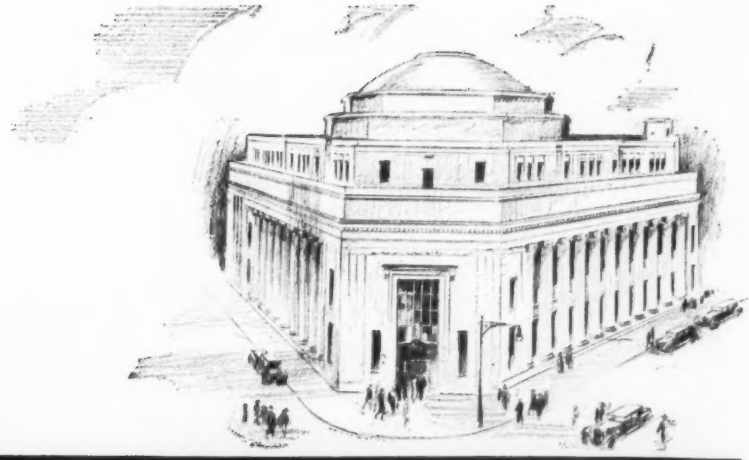

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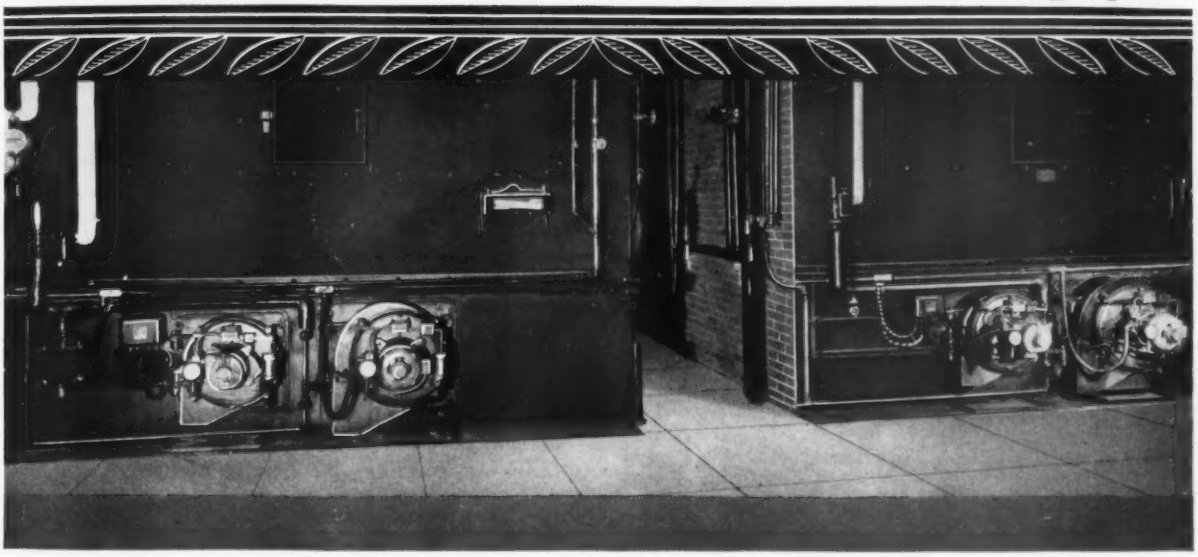

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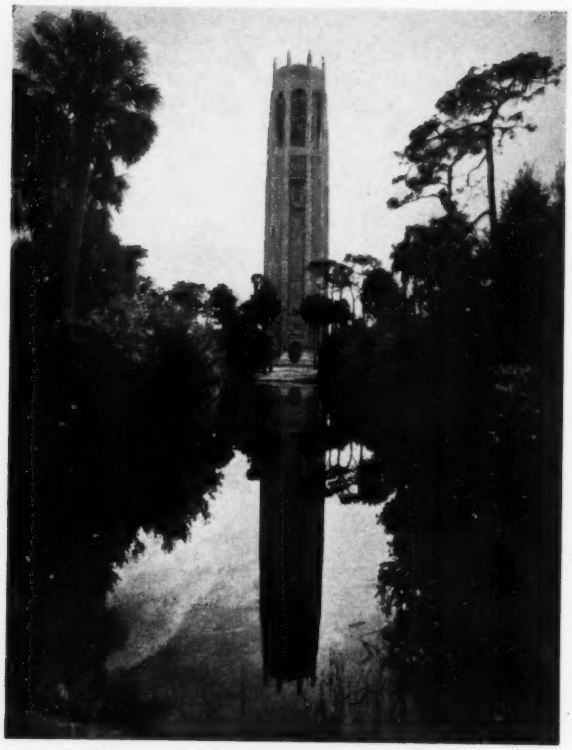

The Singing Tower, Lake Wales, Florida. From Year Book, "American Society of Landscape Architects"

ILLUSTRATIONS OF THE WORK OF MEMBERS, AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS

By the Year Book Committee, Clarence Fowler, Chairman, with an Introduction by Henry Vincent Hubbard. Published by The House of J. Hayden Twiss, New York. Illustrated by 214 photographs and plans; size 10 x 12¾; price in boards, $4.00

THIS monumental yearbook is composed chiefly of a notable collection of plans and photographs of current work of members of the American Society of Landscape Architects, together with a list of its members. The plates are handsomely printed in duotone ink on fine paper. The volume is replete with inspiration for architects, and demonstrates the fundamental importance of specialized training in landscape work. The results of proper collaboration between architect and landscape architect are made evident by the character of the work illustrated. This is a book to be possessed and enjoyed by every architect.

Pomona College, Claremont, California. From Year Book, "American Society of Landscape Architects"

THE DESIGN OF STEEL BUILDINGS

By Harold Dana Hauf, M.S. Published by John Wiley & Sons, Inc., New York. Illustrated: 222 pages; size 6 x 9; price $2.75

IT is the purpose of this text to present the general principles of structural steel design as applied to the more common types of buildings such as apartment houses, schools, offices and institutional buildings. The book was developed from notes used in the third year course in architectural engineering in the Department of Architecture, Yale University. It is designed to meet the requirements of architects and engineers entering professional practise, and to this end, presents the theoretical material in a concise manner. The author has sought with success to bridge the gap between academic work and professional practise.

REPORTS OF COMMITTEES ON HOME MAKING, HOME FURNISHING AND INFORMATION SERVICES

President's Conference on Home Building and Home Ownership, Washington, D. C.; Prepared for the Committee by Martha Van Rensselaer, Ruth Lyles Sparks, and Pearl Chase, chairmen; edited by John M. Gries and James Ford. Illustrated; indexed; 238 pages; size 6 x 9; price $1.15

THE reports of the three committees included in this volume are crowded together because they cover three important aspects of home making. The Committee on Home Making has felt that the home and the development of family life is the end product of a well-conceived housing problem. This report touches upon the effect of housing on family life in cities and rural areas and includes a chapter on suggestions for further research of considerable value to sociologists.

The Committee on Home Furnishing and Decorations has laid particular stress upon the importance and possibility of bringing beauty as well as convenience, comfort and appropriate furnishings within the reach of families of moderate means. The responsibility of manufacturers for providing well designed low cost furniture has been developed.

The Committee on Home Information Services and Centers has sought to encourage the establishment of local sources of data and guidance to aid home owners in all communities in the betterment of their dwellings.

THE COLLEGE LIBRARY BUILDING, ITS PLANNING AND EQUIPMENT

By James Thayer Gerould. Published by Charles Scribner's Sons, New York. Indexed; 116 pages; size 5½ x 8½; price $2.00

ARCHITECTS facing the problem of designing school or college libraries will find in this book the observations and considered findings of a man who has personally studied the libraries of more than fifty American colleges and universities. The author is the Librarian of Princeton University. He has analysed the planning requirements of each department of the complete library, in terms of direct utility to architects. His chapter on materials and equipment contains many helpful and critical observations. Printed on antique finish book paper, without illustration.

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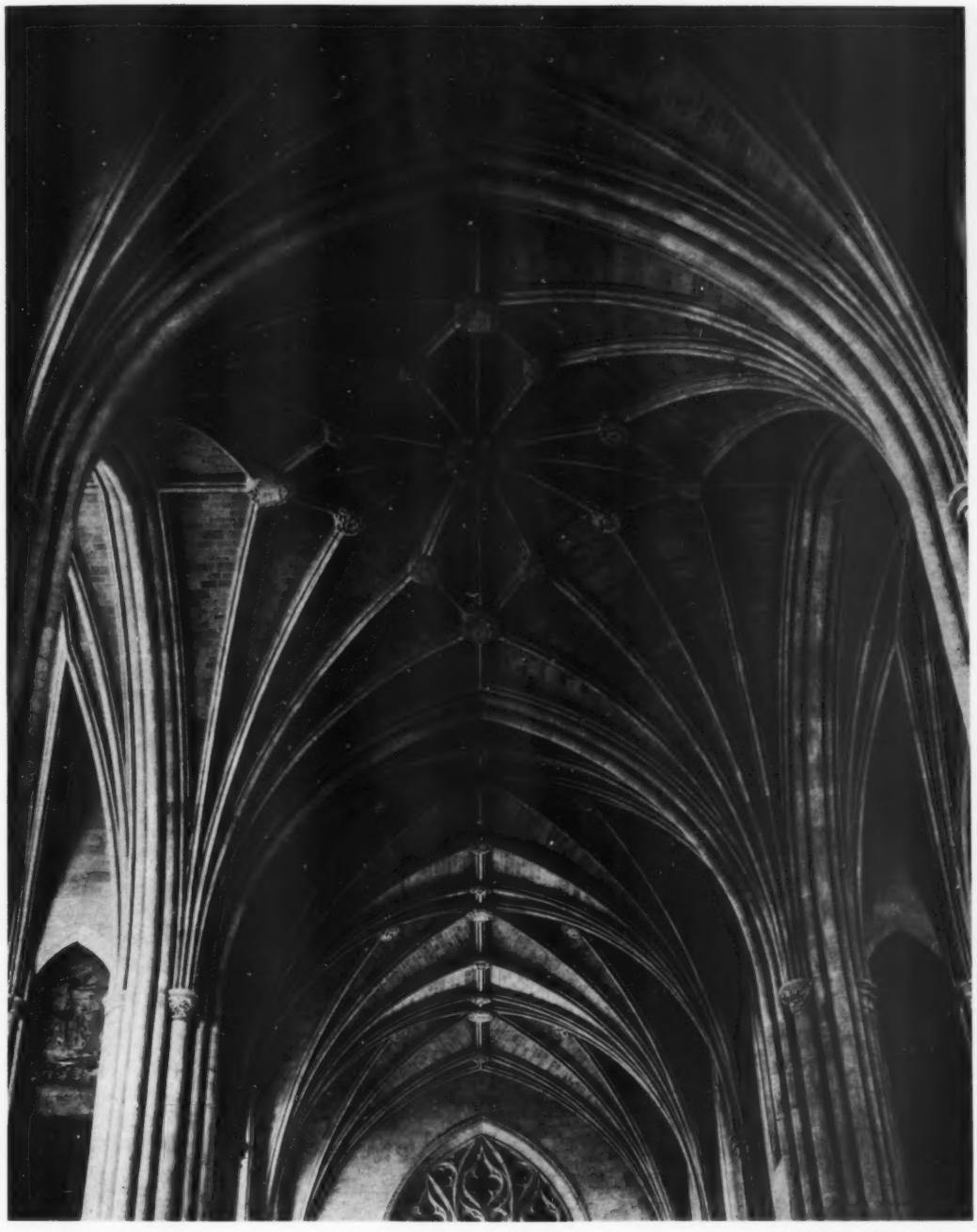

Detail of Crossing
DUKE UNIVERSITY CHAPEL
Durham, North Carolina

HORACE TRUMBAUER
Architect

GUASTAVINO TIMBREL TILE CEILING VAULTS
BETWEEN RIBS WITH AKOUSTOLITH SOUND
ABSORBING STONE SOFFIT

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"On a single building operation something may be risked for the sake of experimentation, but on a two hundred and fifty million dollar development, and one which may set a precedent for many in the future, mistakes can be so costly that they become catastrophes." *Raymond Hood*

Architectural Forum, January, 1932

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Architects

During a 26,000 mile sketching tour of the United States, A. C. Webb's interest was intrigued by the colors and composition of the stables and garage of Cheekwood, the estate of Mr. Leslie Cheek near Nashville, Tennessee. This month's cover reproduces Mr. Webb's painting of the group. The entire estate, including the landscape work, was completed this Spring by Bryant Fleming, architect, of Ithaca, New York. Mr. Webb is a native of Nashville, an architect who has practised in Chicago, New York and Paris, and an etcher and artist with a number of notable exhibitions to his credit here and abroad.

AMERICAN ARCHITECT

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NOVEMBER 1932

Cover—A Water Color by A. C. Webb

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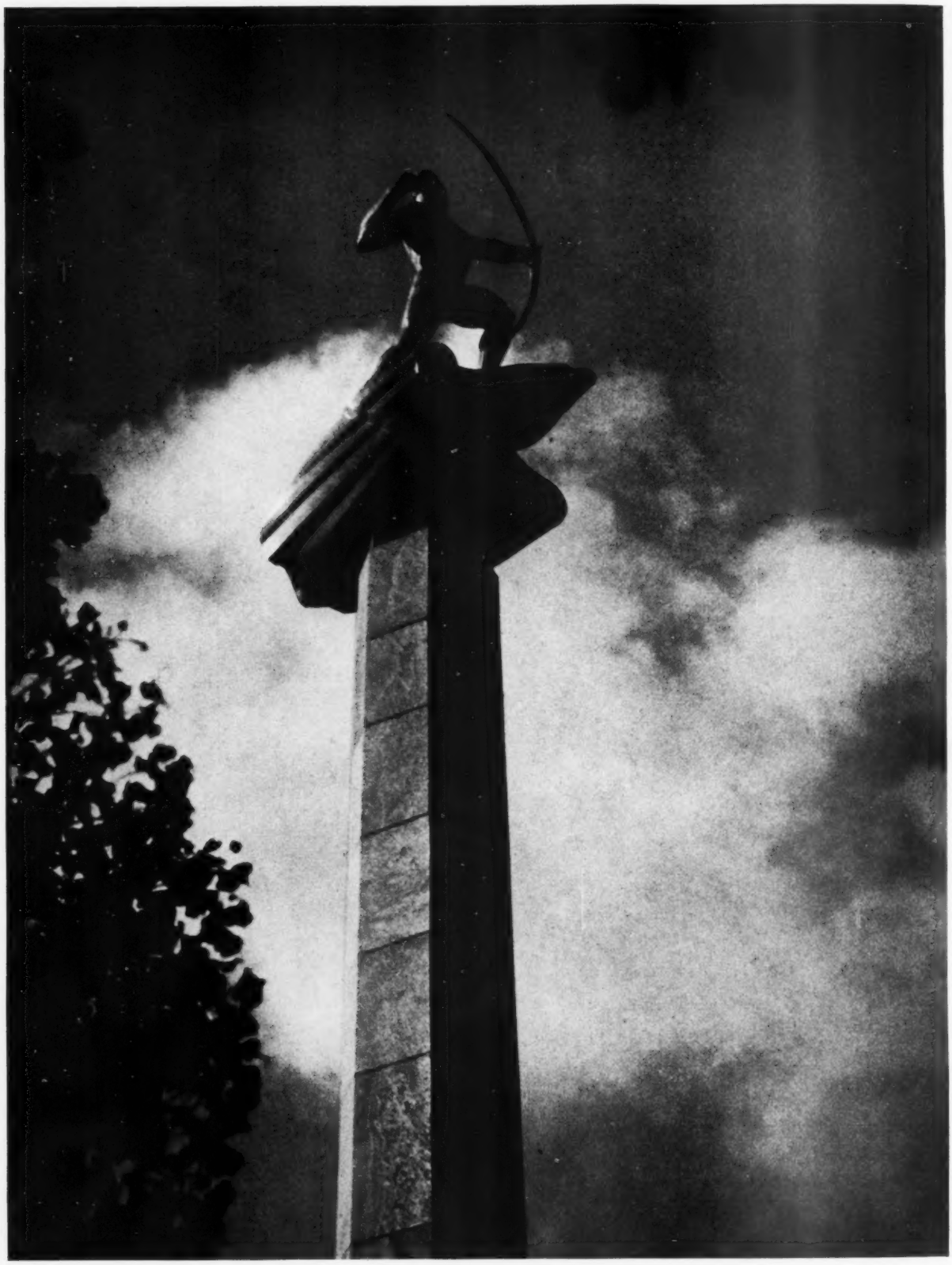

"THE ARCHER"

CARL MILLES, SCULPTOR, STOCKHOLM, SWEDEN

A camera study by Sigurd Fischer

In Times Like These

BY BENJAMIN F. BETTS, A.I.A.

A RECESSION in business is not new to members of the older generations. They know that history is merely repeating itself. To the younger men it is a new experience. But all are learning lessons in business and thrift which, if they are wise, will stand them in good stead in the years to come. Everyone is faced with new problems and temptations and many listen to the dolorous words of the pessimist.

Among other things, architects have learned the danger of excessive office overhead and the importance of building a financial reserve when business is good. Some will remember this when business improves.

A danger to be guarded against in times like these is the possible letdown in professional ethics. Many are no doubt tempted to cut fees, make free sketches and enter into practices that are harmful to the individual as well as to the profession as a whole. As morale is weakened, high ideals are endangered. To maintain high ideals and regard for professional ethics requires considerable moral courage. This is essential right now.

IN times like these the pessimist finds willing listeners when he forecasts that everything is "going to the dogs" including the existence of the architectural profession. Statements are made that standardization will no longer provide a place for architects. This might deeply concern architects if human beings, physical environment, construction and design could be standardized. Human beings accept standardization up to a certain point. After that they insist upon remaining individuals. Environment certainly cannot be standardized. Building construction has been largely standardized. Further standardization—admitted as desirable—will have no adverse effect on the demand for architectural service. As a matter of fact, standardization has greatly simplified the work of the architect and he should assume his proper place in relation to it. In the matter of buildings, standardization of certain types is possible and economically desirable. Recognizing this fact, architects can well assume the responsibility of seeing that they are well designed.

The pessimist complains that the profession is overcrowded. He forgets that every line of human endeavor is overcrowded at the bottom and that there is plenty of room at the top. Do not take him too seriously.

Times like these demand clear thinking, a return to fundamentals and a readjustment to new conditions. They require the preservation of professional ethics and high ideals so that the profession of architecture may not retrogress. It is a time for self-analysis so that one may profit from mistakes of the past. In times like these men learn new things; dreamers are brought back to earth; the wheat is separated from the chaff.

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MANHATTAN
KANSAS

A Professional Fee

Years of experience have proven

BY R. CLIPSTON STURGIS, F.A.I.A.
Past President of the American Institute of Architects

OF all the vexed questions connected with the practice of architecture probably none has been so fruitful of trouble as the payments to the architect for his service.

A commission, *based on a percentage of the cost of the work,* is not only utterly unsuited for general application, but is open to the very real objection of the architect's financial interest in the cost of the work.

Attempts have been made to classify work according to its complexity and establish different rates of commission, and also to make sliding scales to obviate the inequalities of a commission as applied to works of greatly varying costs.

Architects have been faced with a new aspect of the problem, that is, work in which the repetition of units makes a commission on the cost peculiarly inapplicable. This is not a wholly new problem because lofty office buildings have floor after floor exact duplicates, but this is not quite the same as building a hundred houses all alike, which is a situation developed since the war.

The United States Housing Corporation followed a method in handling wartime housing which had but recently received the consideration and endorsement of the A. I. A. of a fixed professional fee for the service of the architect, and then the payment of all costs of performing the professional service required.

A few architects had been using this method of charging for many years, and with such success, and such unfailing endorsement from clients, whether public or private, that some account of the way in which the method developed may be of interest.

The first step was based on the fact that the draughting of a job was a fair measure of its complexity, and that the fee should bear some relation to this. A study of the fees on completed work led to the conclusion that the average job netted the architect about one-half his commission. If he actually lost money on some small and complicated job, he made enough on the large and simple ones to even up, and the average job yielded half the gross fee as profit. It was also found that in offices of fair size, in large communities, the draughting pay-roll about equalled all other expenses, i.e.—rent, light, heat, clerical assistance and supplies. Therefore, draughting times two was the actual cost, and a similar amount would give the architect his fee, so draughting times four was tried as the gross fee.

The first trial of this proved that too much depended on the draughting pay-roll, and that this was as objectionable and as unfair as the commission basis. From this point the attempt was made to determine the fee irrespective of the draughting, leaving the draughting doubled to cover the cost. The first measure tried was the old commission basis, applied, not to the final cost, but to the estimated cost of the work, and, as it was the professional fee only, it was half the commission. That is, with 6% on a $100,000 job, 3% was the fee. This, however, was still not entirely satisfactory.

The next step then was to fix the fee tentatively on this half commission basis and then modify it by two other considerations, first, the complexity, and second, the length of time of the service.

This sounds complicated, but is really fairly simple, because it so readily falls into terms of an annual salary, and a salary is the sort of thing that every one is used to and accustomed to measure by. An annual salary then, based on the character of the service, its length and the approximate financial responsibility involved, seems to be the best way to determine the fee.

Incidentally on this basis some fees are shown up as unreasonably large—an office building costing $3,000,000 and carried through, from first drawings to completion, in two years would mean at 6% a fee of $180,000; half of this at least clear profit, would mean a fee of $90,000, or a salary of $45,000 a year, and this generally for but part service of the architect, who undoubtedly would have other work. The average business man would at once question whether the service to be rendered by the architect was worth this, where he might not question the accepted rate of commission.

Monthly Payments an Advantage

THERE are various advantages in this method which will be touched on later but one which influences the determination of the fee may be mentioned here.

Under this plan both the cost of the architect's force, and the architect's fee are paid monthly from the start. Under the commission system an architect used to wait for a first payment until a contract was signed. Theoretically this was because until the contract was signed there was no amount on which to base a commission. The older men know what a burden this was when work dragged and many changes multiplied drawings with no prospect of compensation for the redrawing unless the cost of the building exceeded the amount originally proposed. Then there came a time when the architect received a part payment when preliminary sketches were accepted and this commission was based on an approximate estimate. Even this, however, was but a step toward the good business principle of paying as you go, and not making bargains which involve the furnishing of capital and interest on it.

Under the fee system payments are made monthly from the beginning of the work, covering a portion of the fee, and the whole cost of draughting to date. It is

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For The Architect

fee plus cost to be good business

COLLEGE OF AGRICULTURE LIBRARY NOV MADISON

customary to reserve a fifth of the fee payable at the end and divide the remainder into monthly payments.

As examples of the application, assume two pieces of work, one a house estimated to cost $100,000. and one an office building, of ten stories of which eight are duplicates, estimated to cost $500,000. The time for each being estimated at eighteen months, it may be fairly assumed that these two involve an equal amount of service on the part of the architect. The first costs but one fifth of the second, but will require the constant personal attention of the architect, from the first sketches to the last finishing touches, while the second, once past the stages of study of plan and design, will be executed by the office with but little further attention from the head. The question then would be to determine a fair fee for the eighteen months' service, bearing in mind that the first involves more personal attention, and the second responsibility for a greater investment. In fixing the value of this service one will also bear in mind that the architect assumes no risk of having his profit eaten into by draughting, that he will not have to carry his office expense except month by month, and that he will receive a share of his fee each month. Assume that $4,000 a year—that is $6,000 for a year and a half—would be a fair professional fee. Twenty per cent reserved, $1,200, would leave $4,800 to be distributed in eighteen monthly payments, $266 a month.

Compare this with the commission basis.

The average house would be at least ten per cent and the office building six per cent—10% on $100,000 is $10,000 and the architect would be fortunate if his expenses did not run over half of this. Six per cent of the $500,000 would be $30,000 and it is unlikely that the expenses would be even half this amount, and the architect would net on the office building three times as much.

A somewhat extreme contrast is taken here merely to emphasize the comparison. Probably in practice one would be more influenced by the actual expenditure, and would place a somewhat lower fee than $6,000 on the house, and a somewhat higher fee than $6,000 on the office building, but it is surely obvious that the service of the architect, himself, is not worth two or three times as much, on one as on the other and that $5,000 and $8,000 would be a fairer ratio between the two.

Advantages of Fee System

THE great advantage of the professional fee then is the ready means of gauging it according to the character of the service to be rendered and the length of the service, in place of depending on the cost of the work.

The second advantage is its ready adaptation to partial service. The reserved twenty per cent is a convenient amount with which to terminate the work at any period. If but two months' work has been rendered and only the preliminary drawings are complete, when the owner abandons the work, he pays the reserve, twenty per cent, and the two months' fee and expenses, and the whole matter is closed. At any stage of the work this is a fair settlement.

The fee applies also to work which is originally partial service; professional advice, a preliminary survey and report, consultation, judgments and arbitration. All of these would carry a fee based on the character of the service and its duration, and often there would be no expenditure at all on the part of the owner, and never any reason for basing the value of the professional service on the cost, even when there is any.

It applies also to work involving almost nothing except the architect's personal work. When an architect charges twenty-five per cent for designing, detailing, and following the execution of a carved screen which costs but $1,000, the percentage seems huge; but the payment of $250 for such service is, if anything, small. If a design, involving no more service, is executed in a material that makes the screen cost $5,000, it is absurd that the architect should receive five times as much for exactly the same service. If, however, he told the owner at the outset that for this personal intimate service, where design, details, and the supervision of models and execution were to be wholly his own, he proposed to charge $500, the owner would compare it with the fee for an operation for appendicitis and probably conclude that it was fair enough.

Typical Examples of Fee System

THE following figures are typical examples of various pieces of work executed by my office which were based upon this system.

	Estimated	Actual Cost
(1) A Bank Building		
Building	$600,000	$592,494
To take	24 months	24 months
Fee	16,000	16,000
Draughting	15,000	15,218.46
Engineers	2,700	2,680.32
Incidentals	2,700	496.50
Clerk	3,600	1,960.00
Models		414.00
Rendered perspective		520.50
(2) A Small Country House		
Building	$29,000	$32,025.49
To take	9 months	12 months
Fee	1,800	2,100.00x
Draughting	1,000	1,501.42
Engineers	300	456.30
Incidentals	250	191.98

(x—the increase in fee represents three months more service.)

(*Continued on page* 92)

XUM

"The old order changeth"

IT is not easy to realize that the tendency towards a modern style—as we choose to call it—so dominant in our architecture today, has been in evidence only about six years. For, as you will recall, it was in 1925 that this country declined with thanks the invitation to be represented at the exposition of L'Art Moderne, held in Paris in that year, because we admitted that we had nothing of "modern design" to exhibit. Previous to that time, American architecture was largely a matter of turning out a design—I purposely avoid the term "creating"—that would bear the character of some one or another of the historic styles or periods. In fact, we may well designate that era of architecture in this country which begins where the Victorian leaves off (wherever that may be) and continues up to 1925, as the Age of Period Influence.

In those days, which we may now record as a thing of the past, originality and creative ability were almost obsolete terms. In fact, we had every reason to believe that architects in this country were not possessed of the creative urge, as we supposed all architects were, and they gave us very little evidence of being endowed with that which is biggest in the temperament of every artist—imagination.

But a change has come over American architects during these last six short years! They come out boldly today against precedent and tradition and their one idea seems to be to do something that has never been done before. Sometimes, in their eagerness to dispense with columns and cornices, they overstep the mark, but, at least, the average American architect today cannot be called a copyist and that is more than can be said of his prototype of twenty-five, fifteen and even ten years ago.

The interesting part of this modern movement is the way it started. An architectural style generally develops gradually over a period of years. Few people really see the change coming and the few who do seldom live long enough to see the style perfected. But this modern movement had quite a different origin. The people seemed to rise up *en masse* and cry; "We want a modern style of architecture that is American!"

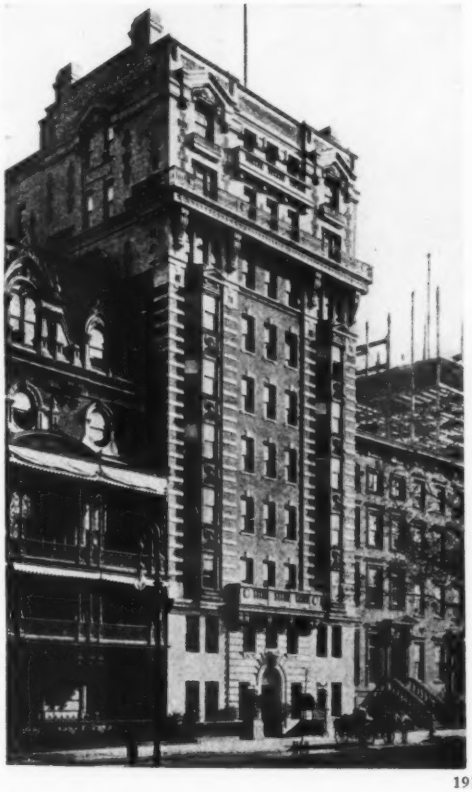
This demand on the part of the people was welcomed by architects. Many of them had been forced against their wills

1929

1923

ABOVE, Rand Tower, Minneapolis, built in 1929. At right, the Crerar Library, Chicago, built in 1923. Indicative of the change in six short years. Both designed by Holabird and Root

1929



1915

The Break With Tradition Has Spelled Opportunity For Pioneer Spirits

BY R. W. SEXTON

to "design period buildings" and most architects have been overjoyed to find that the people wanted a change. And see what happened! Architects who for years had been disciples of Vignola and Christopher Wren surprised their public—as well as themselves, probably—by creating designs that were expressive of American life of today and were still architecturally sound. Architects who had been acknowledged leaders of the Beaux Arts in this country during a greater part of their professional life brought out designs for buildings that suggested a keen appreciation for the fundamental principles of architecture, but which at the same time reflected the spirit of twentieth century America.

COMPARE, for example, the design of some building in your own city built ten or fifteen years ago, with some other building of a similar type designed during the last five years. In mass and in detail the two buildings are as different as night and day. The architect of the older structure may have been applauded at the time for the clever way in which he "adapted" (a better word than possibly he deserves) the design of some fifteenth century masterpiece in solving a twentieth century problem. He was congratulated on his strict adherence to precedent. And, then, only ten years later, with the conditions of the problem only slightly changed, we find the designer of the later building just as loudly acclaimed for his freedom from stylistic influences. We cannot help wondering what it was that brought about such a change in so short a time. The height of the building has nothing to do with it; perhaps the older building tops the newer one by several stories. It cannot be entirely due to zoning laws, although they may have had some influence on the change, particularly on the mass. How then can we account for such radical departure from what has been done before?

One thing is certain: the change in architecture has not come merely because we have developed a "modern style." That would not be possible in so short a time. In fact, my interest is not in seeing this modern style perfected. My ambition is not in living to see a style of architecture adhered to throughout the country that shall be peculiarly American. But I am glad that I have lived long enough to see something else. I have lived to see the average American architect come out of his

ABOVE, the Panhellenic Tower, New York, an apartment house for women, built in 1929. At left, apartment hotel in Madison Square, New York, built 1915. Both designed by John Mead Howells

XUM

1929

1902

ABOVE, office and store building, San Antonio, Texas. Built in 1902 and designed by Atlee B. Ayres. **AT LEFT,** Smith-Young Tower, an office building in San Antonio. Built 1929, and designed by Atlee B. and Robert M. Ayres

shell. I have lived to see him admit to an ordinary amount of confidence, at least, in his own ability. I have lived to see him exercise his creative genius.

And why, you say, has he finally come into his own? Because he is lending his every effort to the development of a "modern style"? No. That is of secondary importance. But because this modern movement has allowed him to progress. It is not the modern style that he may be developing that is of moment just now, but the more important fact that this modern style is really and truly developing him.

There are many people,—house-owners, prospective house-owners and architects, too,—who still think that this movement is a local fad. They actually object to the development of the architectural profession in this country. They insist upon abiding by that old adage that there is nothing new under the sun, in architecture or in anything else. It is hard to believe that men who have given their lives to the study of architecture now come out firmly against progress. It is the doctrine of these men—many of whom have for many years stood at the top of the profession in this country, many of whom are considered as authorities by the laymen, many of whom exert a tremendous influence on public opinion —that the younger architects must fight.

Last summer I took a trip across the continent, passing through such cities as Chicago, Kansas City, El Paso, Tucson, Los Angeles and San Francisco, and everywhere I went I found that the designers of the new important buildings are "going modern." Architecture has lost its old-time drudgery; the live members of the profession are designing live buildings. This is the day for the young man in architecture. The older man must change his ways—and many of them have—or he must watch his step.

I PLEAD with the young architect to "be yourself." This modern movement is your salvation. Use it as a means of developing yourself. Don't be a copyist. Don't think that because you were taught the orders in school you must make use of them literally in every design. They may serve well to teach you good line and proportion, but, unless you understand the sense of relationship, you might better not have gone to school at all. Learn how the orders were originated to help the architects of those days solve their problems. Then learn to adapt the same principles to the solution of your problems today.

I am not preaching radicalism in architecture; but I am preaching progress. And it is encouraging to see that even young men who have not yet received their degrees, men who are not even taking up the study of architecture in their college courses, are having their minds developed along the right track. Never mind about the "new style" that some of the more radically-minded are talking so much about. But play up the modern movement for all it is worth insofar as it affects your development. After your development is complete, a new style will come about just as sure as you live. And that new style may be very different from what we today designate as "modern."

XUM

1932

Even greater departures from tradition are forecast in the buildings being erected at the Chicago World's Fair. Administration Building. Designed by Edward H. Bennett, Hubert Burnham and John A. Holabird, architects

XUM

A Little Book That Helps Get Jobs

BY W. H. WOLAVER

Smith and Senter, Architects
Tulsa, Oklahoma

"YOU remember the Tightville School job?"

"Do I? Say, I worked on that job for weeks, made sketches too. Then you came over on the night they were going to select the architect—and got the job. How did you do it? They wanted a lot of building for their money."

"Yes, they did want a lot of building. That's why they gave me the job. I told them plainly they couldn't possibly build what they proposed for the money available. They wanted to know what they could expect. I told them I didn't know—which was the truth."

"You don't mean to tell me they gave you the job on that much information?"

"No, not just that, I tried to make them understand, and I think they did, that a good building costs a certain amount of money. I showed them my cost book. I believe this little book has done more towards getting me jobs than any amount of sales talk."

"What's in it? Let me see it. Could I—or would you mind if I make one like it?"

"Now wait a minute. Of course I don't mind if you make one like it. I'll help you, but you will have to make one for yourself. This one would not help you.

"In the first place, you see, I have classified all the buildings I have built.

"Now take a school job for instance, open the book at the thumb-tab—schools. Here is the one we were just talking about, the Tightville School. There is a space for the owner's name; here in the corner is a space for the date. The date is essential as building costs vary over a period of time. Yes, I'll admit it is the old cube method, but it is different in this respect: it is accurate and it is itemized. I not only list the cost per cubic foot of the building, but the cost per cubic foot of all the major items in the building, including the modest fee of the architect; that is part of the cost, too. Here at the bottom of the sheet I have a place for special notes, such as: contractor lost money (they all do), any special items of extra cost, certain materials donated free, foundation walls already in place, reinforced concrete, steel, frame, number of class rooms, gymnasium, auditorium, and so forth—any items that make this job out of the ordinary.

"Over here at the right of the sheet is space reserved for a plan showing the general shape of the building.

"This is the book I showed the school board. I showed them photographs too, but they were most interested in this book. This was the first business-like information which had been put right before their eyes where they could see it. One old member, who had been on the board ever since his father died and willed him his place, wanted to know if I knew what a good cow barn would cost. That stumped me a little, but you see I did have one here; why I ever cubed that I do not know, but here it is. Looks silly, doesn't it? Well anyway, it won that board member. There was one woman on the board. She asked about a six room, English brick veneer residence with two baths. I told her I never kept data on residences. The costs varied so much you simply could not depend upon a cube estimate. Now that is a good tip. If you want to get in trouble fast, just try to rely on a cube estimate for a residence. They are in a class by themselves insofar as cost is concerned.

"GETTING back to the school board, they studied those items carefully, especially the cost of the itemized parts of the building: the general contract, the electrical, plumbing and heating contracts, and dropped a few unnecessary remarks about the cost per cubic foot of the architect's fee."

"What did you tell them when they wanted to know

SMITH & SENTER
ARCHITECTS

Board of Education — OWNER
Tightville, Okla. — LOCATION
Manual Arts Building — BUILDING
November 28th, ..30

CONTRACTS	CU. FT. COSTS	COSTS	DIAGRAM
GENERAL CONTRACT	16.26	$63,850.00	PLAN OF BUILDING.
HEATING AND PLUMBING	3.88	15,000.00	
ELECTRICAL WORK	.78	3,012.00	
ELEVATORS			
ARCHITECTS FEE	1.05	4,093.00	
386,400 CU. FT. AT	22.24	$85,955.00	

REMARKS: Face brick, Bedford stone trim, reinforced concrete construction, cement floors in corridors and toilets. Remainder wood floors. Composition blackboards. Composition roof.

LEON E. SENTER—FORM NO. 5

A LEAF FROM THE BOOK

Costs on all buildings designed by Mr. Wolaver are analyzed and placed in a loose-leaf binder, classification being made according to type of building

how large a building they could build for their money?"

"The truth. I told them I didn't know, but pointed out similar buildings I had listed, showing the number of class rooms, and so forth, and told them about what they could expect. Don't ever make an estimate on snap judgment or guess; carefully study your cost charts, decline or rise in building costs, mechanical equipment, and look out for peculiar building sites and special or unusual items. After cubing your building, add or deduct these as one lump sum.

"I WENT on to tell the board members that it was beyond the powers of any architect to change the cost of building in their particular case. It was his duty to design efficiently and economically, using materials to the best advantage, and that outside of this the architect was powerless to alter the cost of their building."

"Did you come within your estimate on this job? Can you always rely on this information, and do you always come within your estimate?"

"This job was considerably under my estimate. I knew it would be, but I *was* a little surprised when the bids were opened. They were a little lower than I expected, but then, to be safe I always make my estimate a little higher than my cube prices show, not much, but enough to feel easy in case they spring on me something I didn't include, which is generally a number of small items. Every member of the board is entitled to think of something to run up the cost.

"And now, let me give you a good tip. Put everything in your plans and specifications. Avoid extras. I know you cannot avoid all of them, but whip every extra you can. Do not leave items out of your plans to keep the initial cost down, knowing that before you finish they must be included. Extras are embarrassing to you, a disagreeable surprise to your client, and are the cause of ninety-nine per cent of the lawsuits arising out of building contracts.

"Yes, I find this system of estimating pretty accurate, and I have never had a job 'run over' since I compiled these figures. Sometimes, when I am a little uneasy—I confess I am at times—I impose on a reliable and friendly contractor to make a preliminary estimate while the working drawings are in progress. This is a big help, and makes one sleep better.

"I find it a big help in estimating a job to take a blank sheet from the cube book and fill in the different itemized costs, weighing each item carefully by comparing it with the itemized costs of similar jobs.

"Another thing, no matter what your method of cubing is it will work if you are consistent. Always cube the same. Have a set of rules to guide you. I find it good practice to cube from bottom of basement floor slabs to mean height of roof. Look out for deep foundation walls and dirt fill; make a lump sum for these. Don't forget pent houses, sub-basements, machine rooms, and pipe trenches. Make your cube accurate. I cube porches and such open spaces as one-half the actual cube. Use your own judgment and make your own rules."

"WELL, I always looked upon cubing a building as a pretty rough estimate, but it seems you have made quite a study of it to say the least."

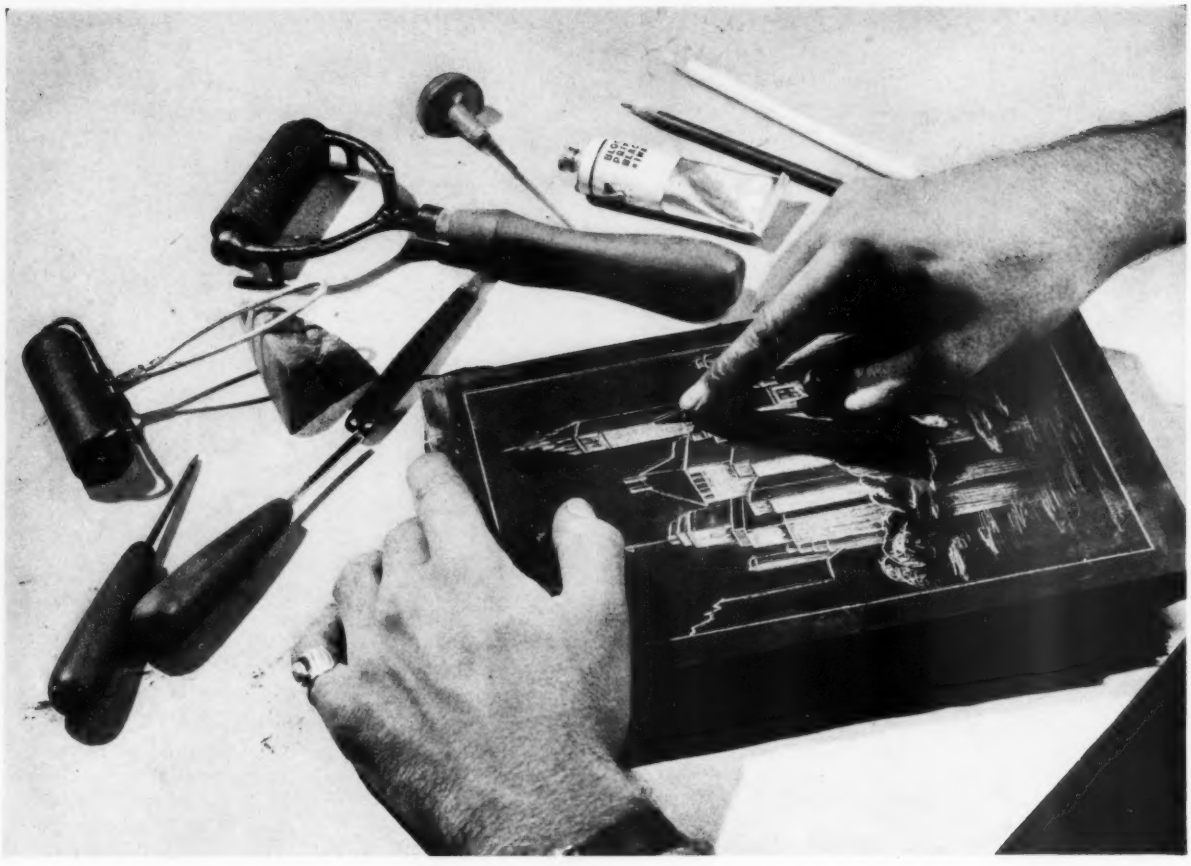
"It is a lot better than a wild guess or snap judgment. It makes you think before you promise anything. You are not a contractor, and besides, many times you have only the roughest sort of a sketch on which to base your estimate. If you will make a study of cubing your buildings you will be surprised how close you can come to the actual cost. Besides, it is interesting and sometimes amusing. There are a thousand ways to subdivide and itemize the cost: cost per story, cost per room, cost per square foot, cost per anything in the building."

"What was it you said about residence work?"

"You can't estimate a residence. It just can't be done, not by cubing, anyway. Some people say weigh the plans and specifications and I believe that is about as accurate a way as any, at least as far as the architect is concerned.

"Best way out that I can see is to call in a local contractor for help, then as soon as he is through add twenty-five per cent to his estimate for the part he forgot, twenty-five per cent for each party concerned in the building, ten per cent for all of their relatives, five per cent for close friends, and then if you are anywhere near it, you are lucky. I don't believe it can be done, though some people say it can."

XUM



Wood engraving is an art that requires but few tools — a graver, knife and two or three gouges, a sharpening stone, proof ink, two rollers, burnisher and a block of wood or linoleum

How to Make Woodcuts

Notes and Hints on the Art of Making Wood Engravings

by John Ramsey

CUTTING a wood block is essentially such a simple process that any explanation of the work must necessarily appear elementary. As nature evolves light from shadow, so the designer constructs his woodcut, throwing light on his subject with each gouge of his instrument. Modeling with light rather than drawing in shadow, he cuts from his composition those portions which he desires to remain white. The limitations of the art make it impossible to secure in a woodcut the delicate half tones of a drawing or etching. All values must be raised or reduced to two tones and in that fact lies one of the greatest merits of the medium: simplification. The essentials of construction, the design as a whole emerge in their clearest terms.

In selecting a suitable block for cutting, any of a number of soft grained woods, such as lime, maple, sycamore or cherry, may be chosen; but the most satisfactory results are obtained from specially prepared blocks made up of a number of small end pieces, usually of boxwood, or from highly polished cross sections of some other hard wood. A soft grain is easier to cut, naturally, but the difficulties encountered in preventing the grain of the wood from guiding the gouges, rather than vice versa, make it less desirable. Or, for the experimenter who wants to avoid the expense of prepared blocks, linoleum provides a splendid grainless medium. Perfectly good "woodcuts" have been produced from it. Thick battleship linoleum is the type which is used.

1ST STAGE—defining line cut around composition. Drawing outlined and broadest light areas gouged out

2ND STAGE—more detail in light areas and sky begun. Compare with final stage on page 23

Instruments of all shapes and widths are available for woodcutting. The individual finds which types suit him best after a short try-out, but for general purposes a small burin (or graver), a knife and two or three gouges of different widths suffice. For work on linoleum only the knife and gouges are practicable.

The wood blocks one buys already prepared are usually so highly polished that it is necessary to dull them by rubbing the surface with an India rubber before the drawing is made. A simple outline sketch on the block is all that is needed before the cutting begins. Some designers prefer to black in all the shadows first, leaving no doubt as to which sections are to be removed. Others ink in the entire block with India ink and then draw their lights in white. Cutting on the simple rough design, however, offers more possibilities for accidental discoveries and surprising effects.

When cutting it is well to place some sort of padding under the block. A small sand bag is the usual thing but a piece of heavy rough cloth folded several times serves the purpose. This prevents the block's slipping under the pressure exerted on the gouges and at the same time permits a free turning of it for cutting from any angle.

The ease with which the gouges or burin do their work depends on a number of things. Tools should be selected which "fit" the individual hand when their handles are braced against the palm and they are more easily managed if their points do not extend more than half an inch beyond the forefinger. The angle at which the instrument is held should not be so great that it gouges too deeply or so small that it merely grazes the surface; in the latter case it may slip and ruin the block.

IN cutting, the wood may be held with the left hand while the right guides the tool, or, if the block can be prevented from slipping by the pressure of both hands, one is surer of his lines if the right hand pushes and the left guides the gouge. The mechanics of making woodcuts are more effectively and easily learned through an hour of experimenting than from a volume of words. One rule holds, however, and that is that the instruments must be kept sharp; and to that end a stone and water or oil should be within arm's reach during the cutting.

The method used in removing the white spaces is arbitrary. One may pick out the detail he desires first, thus avoiding the danger of chipping the outlines of the larger black masses, and then remove the more prominent white areas; or he may cut away the greater light masses (such as the sky outlining a building) and add detail later. The latter method is the logical one and is more likely to result in the broad treatment which the term woodcut connotes. In either case, however,

XUM

3RD STAGE—showing the block advanced toward the final stage and the effect studied by rubbing talc powder into the cut spaces

a definite incision should be made with the knife (or the smallest gouge) around the general outline of the composition so that the engraver, moved by a sudden enthusiasm in the midst of his work, doesn't cut away more white than he intended in his original plan.

IT is well, too, to make an incision with the knife wherever one wishes to terminate a white line, or series of white lines, so that the gouge does not cut beyond the point desired and so ruin the design or a margin line. These incisions should be made at an angle, away from the design so that the sections left standing will rest on pyramidal bases.

Slips do occur, of course, and if the work already done and the damage caused combine to make it worth the effort, repairs can be made. A definite shape, a square, say, which encompasses the damaged area should be removed. An impression taken of that area on paper and pressed on another piece of wood, or linoleum, before the ink dries, will record the exact shape removed. This portion carefully cut out may then be glued and plugged into the original design. The process requires some skill but is feasible and may cover over successfully what seemed irremediable.

As one works he may, without taking a proof, see what effect he is getting by sprinkling a quantity of talc powder on the block and rubbing it into the cut spaces. The result is more satisfactory than a hastily made hand proof and is much less trouble.

The business of drawing proofs when the design is finished is simplified if one has access to a press or if he puts his plate in the hands of a job printer. But very good prints can be secured, with few essentials and the application of a little pressure, by hand. A tube of proofing ink, a roller for inking and one for printing, and a steel, ivory or bone burnisher are all the materials required.

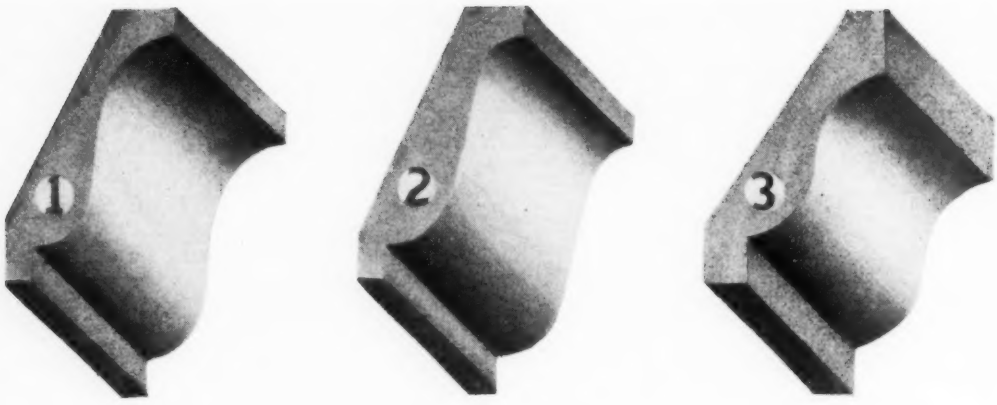
The ink should be mixed on a piece of glass, or a smooth slab of stone, by passing a roller over it until it is evenly distributed over the cylinder. Then the roller is applied to the block, being sure that all surfaces of the cut receive an equal amount of ink. Care should be taken in placing the paper on the block to avoid smearing. A smooth, clear paper is preferable to one with a grain or flecks in it for clear-cut results. A piece of cardboard is next placed on the paper and a roller passed over its surface. Considerable pressure is required. The friction of the burnisher is then applied to insure the absorption of all the ink. If the paper is thin one can see the progress of the proof by lifting the card, for the design will print through. If the paper is thick it is well to dampen it before putting it on the block, as one does in drawing proofs from etchings.

SOME woodcutters apply a piece of cardboard which has been rubbed with beeswax on top of the proof; after passing the roller over the card they remove it and use the printing roller and burnisher directly on the proof. The direct contact insures a clear printing of all portions of the block and the beeswax absorbed by the proof prevents the paper's rubbing up under the friction of the burnisher or the pressure of the roller.

But here again, once started, one discovers his own methods and "tricks." And through experience he learns the value of saving seemingly hopeless proofs which he was about to discard. Oftentimes in their crudeness, their errors, if viewed later with a fresher eye, lies the seed of some new idea.

FINAL STAGE shows the entire composition carried out to the incised defining line made when the block was begun. To print, printing ink is evenly distributed over the block. Paper and a sheet of cardboard are placed over it and printed by rubbing with a roller and burnisher

XUM



Figures 1, 2 and 3. Beauty of form in mouldings depends upon the gradient effect produced by contour

Architects Must Know Their Mouldings

As representative of the American Institute of Architects, Mr. Hall, in cooperation with the Department of Commerce and the National Lumber Manufacturers' Association, was instrumental in securing a revision of the lumber manufacturers' "Universal Moulding Book" which was completed in 1931. In this article Mr. Hall presents basic facts on the design of mouldings

BY EMERY STANFORD HALL, F.A.I.A.

Hall, Stromquist & Rice, Chicago — Drawings by Victor H. Stromquist

IN form language, mouldings are the medium by which ideas are expressed. They correspond to words in literature. Their success or failure in expression is due to the skill with which they are put together. Since both mouldings and words are forms of human expression, they are useful, beautiful or valueless according to the way in which they are associated. The combining of words or mouldings is a human art. It is the man back of the expression who is the element that really counts. It is he who has or has not the idea to be expressed.

Through the medium of tangible material one person finds entrance into another person's sensibility by means of the sense of sight or touch. Sight sense is dependent upon light as a medium of transmission while touch is dependent on contact. The sensitizing effect in each case being produced by the configuration of material.

Form, to be most effective in expression, has to be adjusted to the medium of transmission. Where light is the medium, beauty or lack of beauty is brought about by a gradation of shadow and the heightening of reflection. One sees not actual contour but the shadows produced by contour. These are proportionately beautiful in expression, dependent on relative location and gradient effect. Gradient effect is produced by contour.

The contours of curved elements are really various combinations of mathematical curves such as the circle, ellipse, parabola, catenary, etc. It is from various arrangements of these curves and their parts that the signs of form expression are produced. The artist in form depicts his ideas from an innate sense of value without conscious cognizance of his medium of expression. He uses mouldings as the good writer uses words—by mastering them to such an extent that they become his unconscious yet ever obedient servants. The only way to design mouldings is to know mouldings as a painter knows his palette or a literator knows his words.

The architect who is engaged in the travail of design must have mastered the significance of various forms until without conscious effort he can make them speak as he wants them to speak. Mouldings are simply the elements from which forms are made up. It is necessary therefore that every architect should know his mouldings so well that he can be unconscious of that knowledge.

Dr. C. Howard Walker, who is so great in the memory of his contacts that he is no longer "professor" or "Doctor" but plain C. Howard, helped to reinforce the American Institute of Architects' movement for better taste in the design of stock mouldings with the statement:

"I have gone over the sections of mouldings and have

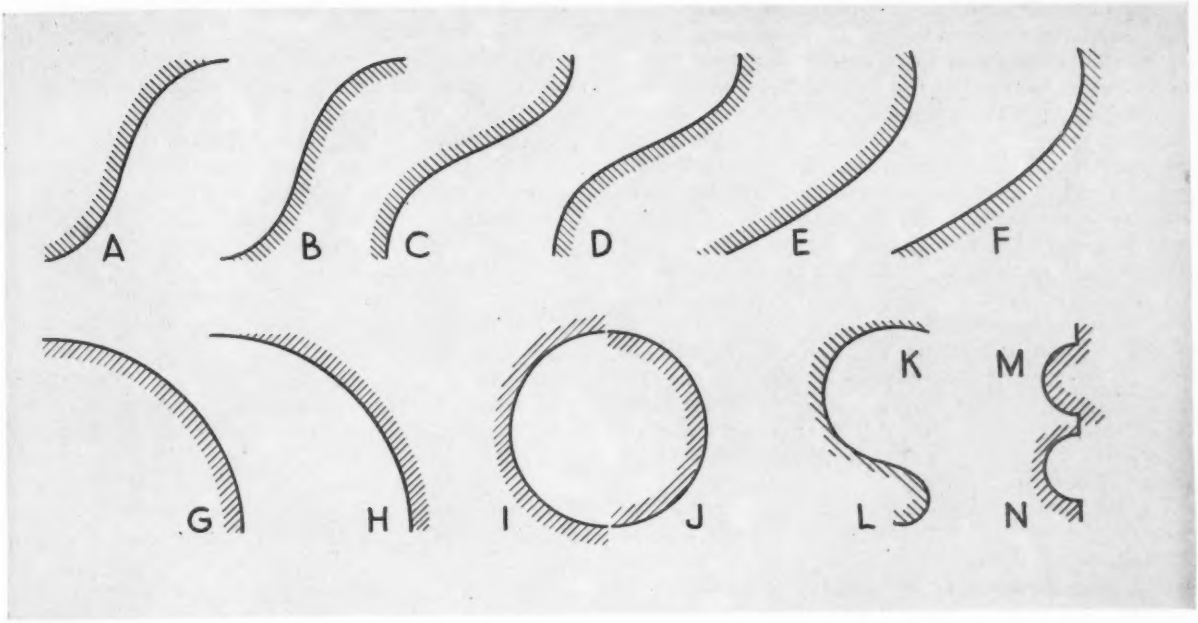


Figure 7

ESSENTIAL SCOPE OF A MOULDING PALETTE

A—Cyma recta or ogee. **B**—Cyma recta inverta or inverted ogee. **C**—Cyma reversa or reverse ogee. **D**—Cyma reversa inverta or inverted reversa ogee. **E**—Catenary ovolo. **F**—Catenary cove. **G**—Quarter-round ovolo. **H**—Cavetto or quarter-round cove. **I**—Half-round scotia. **J**—Half-round torus. **K**—Scotia. **L**—Ovolo. **M**—Bead. **N**—Flute

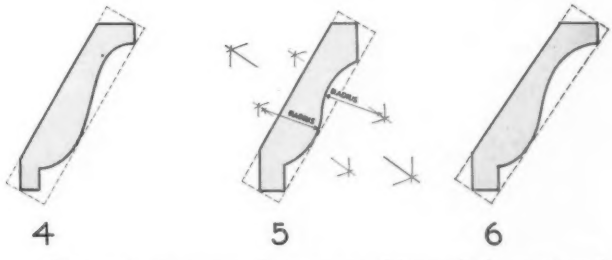


Figure 4. Drawing of crown moulding which convinced lumbermen that stock mouldings such as shown in Figure 5 could be well designed and led to the development of the stock moulding shown in Figure 6

made some suggestions in red pencil, but the objections to stock mouldings are more elemental than such suggestions indicate, so I am writing analyzing the differences between good and ordinary mouldings.

"First—Mouldings are to obtain lines of shadow.

"Second—Fillets are merely conjunctions like 'and' and 'but' in grammar and are to separate sections which would otherwise slur together. But in no case should fillets be large, nor should the under side (the soffite) exceed the vertical face.

"Third—No curved moulding is complete without a fillet.

"Fourth — The difference between commonplace mouldings and fine mouldings is just the difference between Roman and Greek mouldings. The Roman mouldings have sections which are parts of circles; the Greek, parts of ellipses, parabolas and hyperbolas. Parts of circles are of use for large beads and tori.

"Fifth—In any section having a compound curve, i. e., an ogee or cyma, one or the other of the curves should be dominant, either the concave or the convex factor.

"Sixth—Bevels which are not mouldings, and are always mechanical in appearance, should not be used with mouldings, but as chamfers only.

"Seventh—Repeated beads are ordinary. Flutes are of value, but space between flutes should not be more than one-third of the width of flute. Repeated beads and flutes are to obtain tone value only.

"Eighth—All combinations of mouldings are based upon alternations of concave and convex sections, one or the other of which is dominant in the combination, and the curved sections are separated from each other by one or all of the following factors: First—flat surfaces (vertical) or facias, second—bead and fillet (small), third—fillet only (small).

"Facias show horizontal structural factors. Curved mouldings accent joints. Facias correspond to nouns. Curved mouldings to verbs. Beads and fillets or fillets to conjunctions."

DR. WALKER'S statement of principle, while being an observation concerning the fundamentals of art, was also an indictment of existing stock mouldings. It did much to overcome the—"it always has been so."

It was in 1919 that the National Lumber Manufacturers Association asked the American Institute of Architects to appoint a representative of the Institute to sit in conference with representatives of the lumber interests to look into the possibility of developing uniform lumber standards. In the course of this conference

XUM

the question of revising the "Universal Moulding" book was raised for consideration. It was pointed out by representatives of the lumber interests that there were a number of mouldings published in that book which were not good sellers. An ambitious young man compiled a list showing the relative thousands of feet of the different types of moulding illustrated in this book that were sold in a given period of time. His idea, and that of the majority of the lumbermen, was that the only consideration that should govern mouldings for the new Universal Moulding book should be quantity of sale.

A feeling of seeming horror spread over the conference when the representative of the American Institute of Architects made the point that place in the moulding book for stock mouldings should be reserved only for those mouldings whose contour was in accordance with the best taste in architecture. The lumber interests of the country had to be sold as to the commercial value of art in industrial products.

The standardization of lumber of necessity produced new commercial sizes. Mouldings designed to use the old sizes to the highest degree of efficiency were found, by the new standards, to be wasteful of material. In the past the argument against improving the grace of design in stock mouldings had always been the loss of investment in sticker knives. With this change in size of lumber stock, that argument was spiked. New knives had to be ground on account of the changes in sizes of rough stock. This emergency opened the opportunity to secure attention to the claims of good taste in the matter of moulding design.

Inertia is hard to overcome. Dyed-in-the-wool fundamentalists of the lumber trade were shocked at any suggestion of change. These were sure that the buying public wanted the old ugliness. Stock mouldings as they were was the demand of the trade. What was the matter with them anyway? Were they not as beautiful as those designed by the architects?

IN sheer desperation the representative of the American Institute of Architects asked permission to appear before a general meeting of moulding manufacturers that was being held in Chicago. Before going to this meeting he prepared two pantograph enlarged drawings, one (see figure 4) of a crown moulding, prepared, as he saw it, in accordance with the best architectural principles, and another (see figure 5) of a stock crown moulding, selected from the stock moulding book then in use, to exactly fit into the same circumscribing rectangle as required to enclose the first design.

These drawings were placed on the wall in front of the meeting and without suggestion the assembly was asked to vote on which they thought most pleasing. The vote was unanimous for the design illustrated in figure 4. After the vote was recorded they were told that the other design was a perfect enlargment of their pet stock moulding. There being no possible argument against their own taste, they voted to recommend to the standardization committee the redesign of stock mouldings in accordance with good taste.

The work of this first redesign of stock mouldings was done in good taste and followed Dr. Walker's formula but the designer was careless about designing for membering of parts and unfamiliar with the peculiar problems of quantity production. This work is known as the first 7,000 series of Stock Wood Mouldings and is typified by figure 4, on page 25. Although the mouldings were of good design, on account of production difficulties, only a few manufacturers would make them.

In 1930 further adjustments and revisions in standard sizes of lumber stock made necessary further revision of sizes in standard stock mouldings. This gave the opportunity to bring nearly all interests together to do a more careful job of redesigning stock mouldings. The work was carried on by a committee representing lumber maufacturers, wholesalers and retailers of various regions as well as a representative of the American Institute of Architects.

The work of selecting and redesigning standard mouldings extended over a period of about nine months. Many compromises and adjustments had to be made to unify all interests but in the end all substantially agreed.

THIS new work is far from perfect. Compromises and adjustments to commercial demands never result in a perfect product. Figure 6 illustrates a stock moulding designed with a concession to the machine demands of quantity production and at the same time approximating, as nearly as possible, a contour in accordance with the principles of good taste. There is in the second 7,000 series moulding book, published in 1931, material that is not in good taste, but most of it is of good design. Certainly there is enough good material to furnish a moulding palette of sufficient scope to interpret almost any ordinary building project. It is now possible for the designer of small houses in remote communities to secure from local yards mouldings designed in accordance with good taste to properly interpret his design.

Manufacturers explained that mouldings requiring large quantity production should be designed, if possible, to produce three point contact on the ways. It will be noted that figure 6 accomplishes this result while figure 4, as used in the first 7,000 series, did not accomplish this result. The difference between figures 4 and 6 is that the convex curve predominates in figure 4 and the concave curve predominates in figure 6. In figure 6 the fillet at the bottom of the moulding is a little out of scale. The crown moulding has been and is a typical example because it is so largely used in architecture, and for convenience of comparison the illustrations have all been made for the same size moulding. It should be understood that the new 7,000 series moulding book contains a choice in size of all of the various types of mouldings.

One thing that this committee accomplished, which should help tremendously toward a better common understanding of the possibilities of the combination of various curves to express different motives, was the preparation of a series of assemblies in the various styles. In these assemblies it is shown that, working with the same stock moulding, diametrically opposite sentiments can be expressed by arrangement of position and relationship.

The method used was first to reproduce a design of a well-known example of period or style architecture, making as faithful a presentation as possible, then selecting from stock mouldings those most nearly fitted in size and spirit to take the place of those designed. The results are surprisingly satisfactory. They demonstrate that the way to design for the use (*Continued on page* 83)

Unlicensed Architect's Contract With Owner Is Not Enforceable

BY GEORGE F. KAISER, LL.B.

●WHAT HE DID: An architect entered into a contract to prepare plans and specifications, and superintend the construction of an apartment house to cost between $30,000 and $40,000. He represented himself to be an architect and capable of undertaking all such services, and signed all the plans and specifications as architect. Although his compensation was to be 10% of the total cost of the building, when the plans and specifications had been drawn and his supervision of the work finished, the owner refused to pay him anything in addition to a small amount that he had already advanced, having learned in the meantime that the architect was not duly licensed under the state law. The architect started suit against the owner for the balance claimed as due him.

WHY HE DID IT: The architect claimed that the building had been accepted upon its completion as being planned and constructed with a reasonable degree of skill and substantially free from defects, and that therefore the owner should be compelled to pay the balance of fees in accordance with the contract.

WHY HE SHOULDN'T HAVE DONE IT: The Court however, refused to listen to the architect's argument when it learned that he was not duly licensed and held that even acceptance of the building by the owner would not render the contract legal, and permit recovery of his fees. In so deciding the court said "The state statutes do not in express terms make the mere rendering of architectural services by one *not holding* a license certificate illegal, nor do they in express terms make a contract for such services by one not holding a license certificate unlawful and unenforceable, but the language of the act manifestly expresses the legislative intent that it shall be unlawful for one not holding a license certificate to assume the professional title of architect and as such, enter into a contract to render architectural services. This is what this architect did with reference to the construction of the building. We think there is no escape from the conclusion that the contract for architectural services in this case was illegal and void and wholly unenforceable leaving the architect and the owner without legal right of recovery thereon."

WARNED OWNER OF DEFECTIVE WORKMANSHIP

●WHAT HE DID: An owner had made a written contract with an architect to furnish plans and specifications for, and to superintend the construction of a house. The house when finished was in many places non-resistant to moisture. The owner claimed this was because of the use of porous concrete, which proper supervision by the architect would have avoided and refused to pay the balance due the architect, and when the architect sued, the owner counterclaimed for damages.

WHY HE DID IT: The owner thought that he was justified in his refusal to pay the architect the fee due on the ground that the architect should have given such supervision to the work as would have prevented the defects and alleged that the architect only pointed them out to him after the damage was done and the expense of remedying them necessarily fell on him as owner.

WHY HE SHOULDN'T HAVE DONE IT: The court said in deciding that the architect was entitled to recover the amount of the fees due him: "When the owner has independent relations with the contractor, the architect of course, does not warrant the construction. He can do no more than warn the owner of defective workmanship, or material or of failure to conform to specifications." As the evidence showed that he had done this, but his advice had been unheeded by the owner, the court held that the architect was entitled to recover the amount due him, and dismissed the owner's counterclaim for damages.

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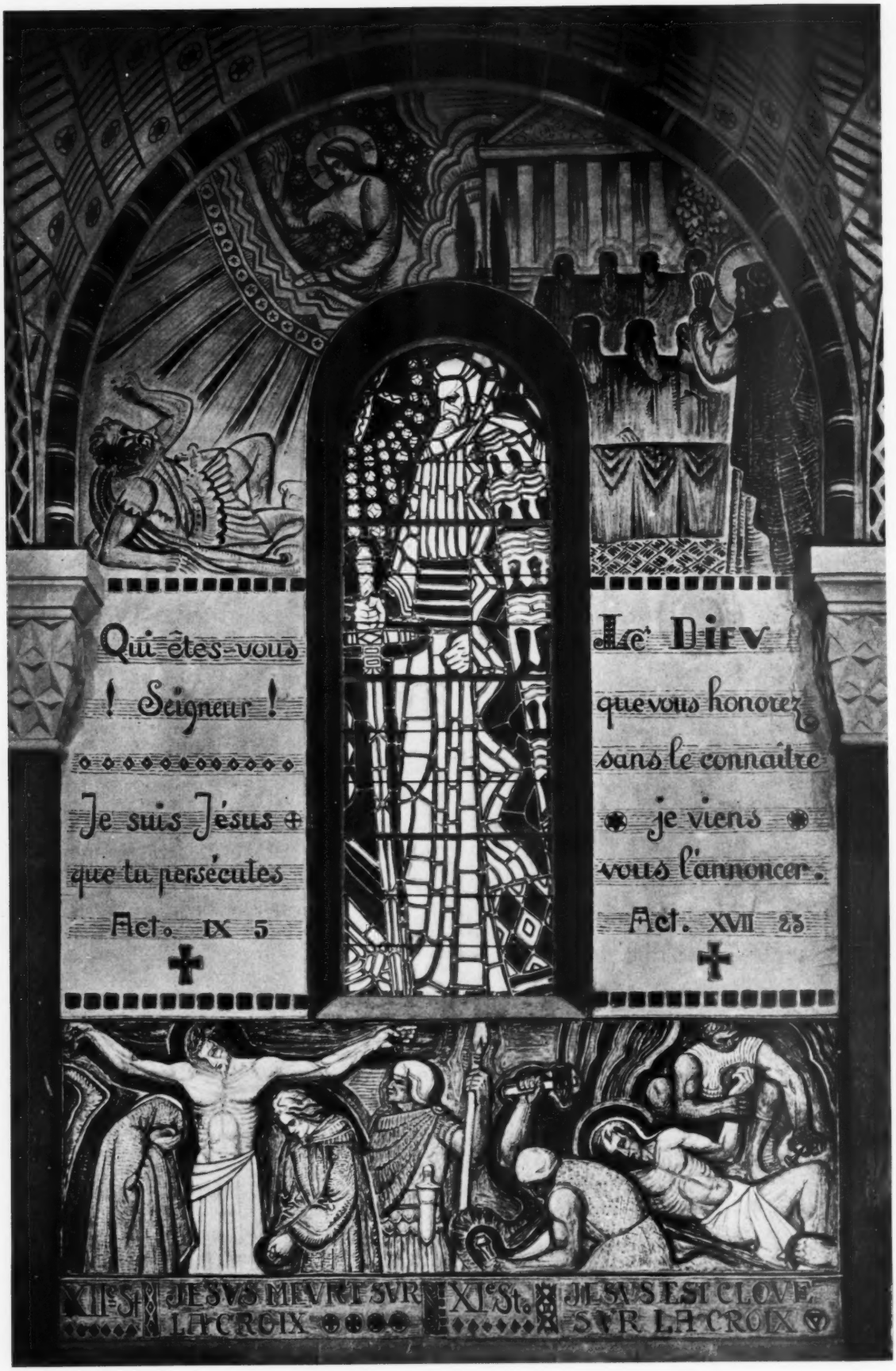
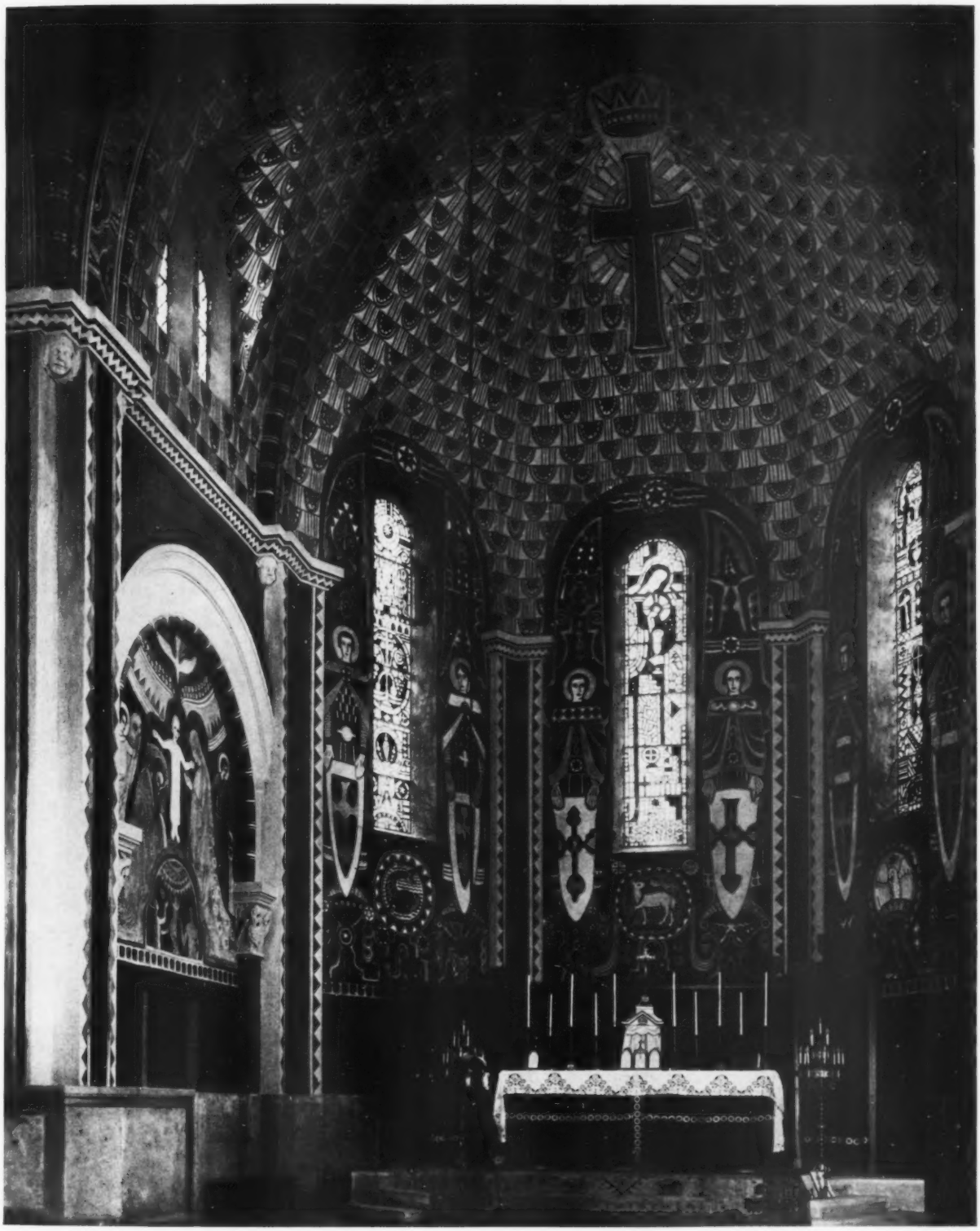

Qui êtes-vous
! Seigneur !
Je suis Jésus
que tu persécutes
Act. IX 5
Le Dieu
que vous honorez
sans le connaître
je viens
vous l'annoncer.
Act. XVII 23
XII^e St. JESVS MEVRT SVR LA CROIX
XI^e St. JESVS EST CLOVE SVR LA CROIX

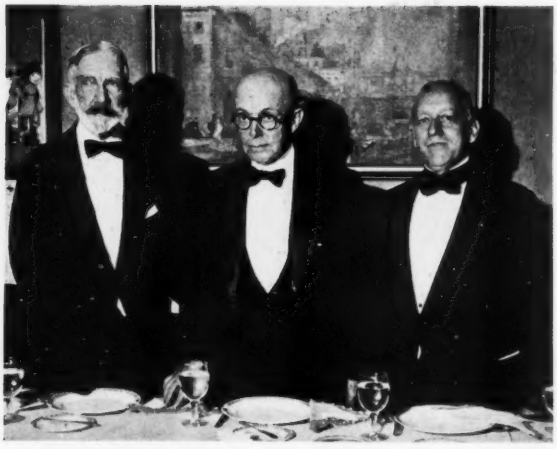


CHURCH OF ST. MARTIN DE BICHANCOURT, AISNE, FRANCE

An example of a church interior in which the walls and windows are designed upon a single theme—a résumé of the Christian religion. The frescoes are executed in black, brown, red, blue and white. The windows are of gray antique glass with small areas of blue, yellow and white. Above: the choir. On facing page: the St. Paul window

RECONSTRUCTION BY C. LUCIANI, ARCHITECT. DECORATIONS, WALLS AND WINDOWS BY LOUIS MAZETIER

What Architects



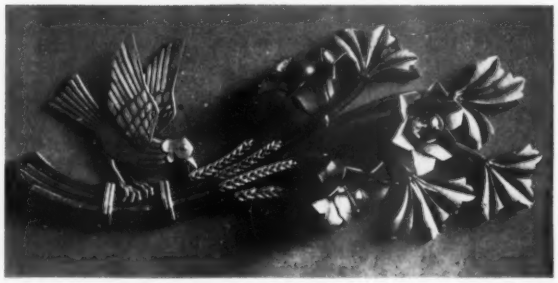
ACME

Charles B. Platt, president of the American Academy in Rome, James Monroe Hewlett, new resident director of the Academy, and Julian Clarence Levi, president of the Architectural League of New York, at a bon voyage dinner given in honor of Mr. Hewlett

CALIFORNIA ARCHITECTS WELL ADVERTISED

BETTER HOMES IN AMERICA CONDUCTS SMALL HOUSE ARCHITECTURAL COMPETITION

END OF SECOND MORTGAGES PREDICTED



BONNEY

Wall lighting fixture in forged iron, designed by Szabo

SPEAKING before the United States Building and Loan League at French Lick, Indiana, recently, Senator James E. Watson of Indiana, predicted the end of second mortgages on small homes when the home-loan bank becomes operative, and its affect is felt. The Senator in part had this to say:

"The truth is that we have never had sufficiently free capital in this country to finance on a proper scale home building and home owning. Many times the home owner has been compelled to resort to a second mortgage, the terms of which are usually so drastic at times and to be so exorbitant that they make it exceedingly difficult for the home builder to succeed in his enterprise.

"If this law works as we think it will, the second mortgage will soon become a thing of the past, and that specter will not longer confront the man who desires either to buy or build a home."

THE Better Homes in America Small House Architectural Competition which closes December 1, 1932, is intended to discover and call attention to the best small houses actually constructed between 1927 and 1931, inclusive. Awards of medals and mentions will be made to practising architects for the best design for each of three types of houses; one story house, a story and a half house and two-story house. Cubic volume for the first two classes is limited to 24,000 feet; for the third class 26,000 cubic feet is permitted.

A jury of five architects will be appointed by the president of the American Institute of Architects. Entries, consisting of photographs and blue prints or drawings, should be sent to Better Homes in America, in care of the American Institute of Architects, 1741 New York Avenue, Washington, D. C.

FITCH

New Post Office for San Diego, California; William Templeton Johnson, architect

Are Talking About

DETROIT ADOPTS NEW BIDDING PLAN

STAINLESS STEEL AND COLORED GLASS TO FORM PLAQUES ON PRIZE-WINNING BRIDGES

MEUNIER WINS TRAVELING SCHOLARSHIP

Low cost homes for 3,000 families planned by Sloan & Robertson, architects, for the proposed Christie-Forsyth Street Project, New York, sponsored by August Heckscher

AN exhibit of Architectural Activities of Civic Interest was held at Philadelphia, September 26 to October 1, in conjunction with the Electric and Radio Show sponsored by The Electrical Association. The exhibit was arranged by D. Knickerbacker Boyd, architectural counsel to the Electrical Association, and a special committee of the Philadelphia Chapter of the American Institute of Architects. Measured drawings of old Colonial buildings in Philadelphia, maps showing the growth of the city, city planning and slum rehabilitation schemes, "before and after" photographs of modernized homes, and examples of night illumination of buildings were among the exhibits shown. The exhibit attracted widespread public attention.

THE PEOPLE OF A GREAT CITY ··· SAN FRANCISCO'S ARCHITECTS
AGAIN SAN FRANCISCO TURNS TO HER ARCHITECTS
CROCKER FIRST NATIONAL BANK
CROCKER FIRST FEDERAL TRUST COMPANY · SAN FRANCISCO

California architects were recognized and honored in this advertisement published by an outstanding San Francisco bank

CALIFORNIA architects, and more particularly those in the San Francisco bay area are the direct beneficiaries of a notable advertisement published in four newspapers by the Croker First National Bank-Crocker First Federal Trust Company, San Francisco. The advertisement reproduces a sketch of the Coit Memorial Tower, soon to be erected. The text stresses the importance of architects and describes their duties and services in this manner:

"Every building project has two aims: the creation of an efficient, good-looking, well-built structure, and the securing of full value for the money expended. Economically, every type of building demands treatment by an architect because he is trained to create an orderly arrangement best suited to the needs for which it is intended. The services of an architect comprise vastly more than furnishing blue prints; the drawings and specifications are merely means to an end. His services are to study the client's needs and to determine how these needs may best be served; and to direct others how to achieve the desired results; to make sure that these results are achieved, insofar as authority and technical knowledge make this humanly possible."

The quoted statement was credited to The State Association of California Architects.

THE efforts of the representatives of the responsible architects and contractors in the city of Detroit to create better conditions in competition in contracts, has resulted in what is known as the Detroit Bidding Plan.

Through appropriate changes in the general conditions of the specifications, this bidding system limits the general bid to that work performed by the general contractor, but includes the handling charge for coordinating the sub-trades by the general contractor. Under this plan the architect will select all bidders, and will divide the specifications into the several headings for the principal trades. The bidding will be upon the separate trades so specified. (*Continued on page* 90)

XUM

. . As It Looks

Jobs Are Not So Hard to Get

ON page 18 of this issue, W. H. Wolaver describes a little book that has proved valuable to him. It is a summary of job costs. It is businesslike and convincing. His story of the school job is reminiscent of another architect who appeared before a school board. Other architects were there with rolls of drawings and rendered perspectives. This particular architect had none and when interviewed flatly refused to consider the board's stipulation that classrooms be designed for fifty pupils. He told them why and went away convinced that he had lost the job. But the reverse proved to be the case as he learned later. His discussion of how schools should be designed and why carried more weight with the board than any drawing he might have presented. It's good to know your subject and be able to convince others that you know it.

An Impossible Suggestion

SUBSCRIBERS frequently write the editors on the subject of printing a filing classification on the plate section pages and also the desirability of perforating these pages or otherwise arranging for their ready removal from the magazine. These features have been advocated for many years. Due to the regulations of the Post Office Department governing the classification under which magazines are mailed neither of these features is permitted. This explanation is offered to readers who may feel that their suggestions are not given the consideration they deserve.

Padlock Specification

PROPOSED revision of the Federal specification for padlocks has been issued by the Federal Specifications Board. The Federal Prohibition Department should know what a padlock should be and should be interested in this specification.

Dangerous Use of Codes

ALL building codes and ordinances have their origin in the police power of governments. Their sole function is protection of life and property. By no stretch of the imagination can they be looked upon as fixing other than minimum standards of safety. They give no consideration whatever to durability, maintenance, quality, performance, or economic factors beyond the essential requirements for safety. There is an almost universal tendency, however, to regard compliance with code standards as assurance of adequacy in all respects. Nothing could be more detrimental to good design and construction.

The obvious cause of this attitude toward codes is the common desire to build at minimum cost. Owners feel that if designs and specifications meet code requirements, they are good enough. Operating costs, maintenance, market value, satisfactory service to tenant or owner through future decades are forgotten in the belief that the codes take care of these things. Correction of this condition lies largely in the hands of architects.

Restricted Definition of Tile

IN deciding an action against an organization selling "Belgian Tile" or "Belgiantile," a zinc plate marked in tile pattern and coated with enamel, the Federal Trade Commission made the following observation in its findings as to the facts: " 'Tile' as generally understood in the building trades and by the general public is a clay product, shaped in comparatively small sized units and baked in a kiln. Tile for the covering of walls and ceilings is usually shaped into units of about four inches square, and is installed upon the proper base by being set in cement by workmen who are termed 'Tile Setters.' "

Inasmuch as this case resulted in the issuance of an order to cease using the word "tile" to describe this product unless in conjunction with the words "imitation tile made of metal," a precedent has been established which may result in the restriction of the word "tile" to burned clay surfacing units of limited dimensions. Tile substitutes may have to find new names.

An Achievement in Terra Cotta

SCULPTURES for the pediment of the Pennsylvania Museum of Art at Philadelphia have been completed after some two years of study and work. C. Paul Jennewin as the sculptor has designed a dignified and beautiful composition using sacred and profane love as the theme. It was executed in terra cotta by the Atlantic Terra Cotta Company. The general color tone of the group has retained that of the stone of which the Museum is built. In consultation with Leon Solon, color, bright but restrained, incorporating red, green, black, blue and gold has been introduced to excellent effect. The group offered many complicated problems in the matter of jointing, firing, anchoring and other details of manufacture. This group is indeed an achievement in terra cotta and one of which all who have labored to perfect it may justly be proud.

The Early Photographer

MUCH favorable comment has been made on the excellence of the photographs, made by Samuel Gottscho, of the Folger Shakespeare Library. There is one interesting thing about the photographs on pages 50 and 51 of the September issue that the average person might easily overlook. The details shown are on the North side of the building, yet the beauty of the details are emphasized by a good contrast of light, shade and shadow. Some of the details were photographed very early in the morning and others by the aid of the last rays of the setting sun.

XUM

to the Editors . .

An Encouraging Sign

AN architect in the East states, "Some time ago we included architect's fees as part of the cost of a building project and were told by the mortgage company that these could not be allowed, only labor and materials being considered. That company now owns about $4,000,000 worth of real estate, much of which is pretty terrible. I recently called at the office of this company in regard to a mortgage loan and was informed that practically the only loans being made were on buildings for owner occupancy and that they preferred to make loans on structures designed by architects." Apparently this company has learned a lesson. It should be possible to make other financial agencies see the value of architectural service.

Seeing Is Believing

IT was a strange experience to visit the first frameless sheet metal house at Solon (near Cleveland, Ohio) during its later construction stages and to find floors of twenty gauge metal that could be jumped upon without vibration; sheet metal walls and partitions only two inches thick to which ordinary insulating boards and other common building materials could be firmly nailed at any point without special provision of nailing blocks; walls, incidentally, that were true and plumb and rigid when pounded; and a complete assembly that seemed to go together in a perfectly orderly and normal way. Undoubtedly, the formal opening of this house, which took place in October, caused many visiting architects to revise preformed opinions, and to view this first experiment in all-sheet metal construction as the possible forerunner of a practical and low cost method of building dwellings. Significant are the moderate cost figures and the adaptability of the structural material to any style.

Taxes Rebound on Architects

THE following extract from a letter of an AMERICAN ARCHITECT subscriber brings out another aspect of the vicious taxation circle:

"The writer's opinion is that the building business will not be renewed until there is a radical readjustment of our local taxing system. Real estate has been taxed to the point of confiscation and there is no incentive to build or to invest in land. If taxes on real estate were entirely removed and a sales tax system were substituted, building would soon revive. However, public budgets must be reduced from 25 to 50 per cent before any system of taxation will be effective. Taxes have increased rapidly during the last decade or two with little objection from any source. In fact, architects and those engaged in the building game have rather encouraged it because much of this money was spent for public improvements. All are now paying a dear price for our folly."

Standardized Post Offices

THE Scarsdale, N. Y., "Sun," referring to proposed local post offices, states:

"As soon as sites have been acquired, architectural work can be speeded up, while to reduce the time required for preparation of plans, the Treasury is considering building almost identical offices in each of the four Westchester communities. This was indicated in the specifications for sites, which are practically the same for each place.

"Should this course be followed, the amount of employment furnished private architects would be severely limited, but considerable time would be saved since type plans, suitable for use in scores of cities will be prepared in one series of operations. This policy also would conserve money, it is believed."

Standardized post offices may save a little money, but when we look to more or less permanent public buildings as setting an architectural standard in a community, is the saving really worth while? As indicated above there arises a curious situation of trying to locate sites to fit a building of pre-established size. Rather like putting the cart before the horse!

New Data on Refrigerating

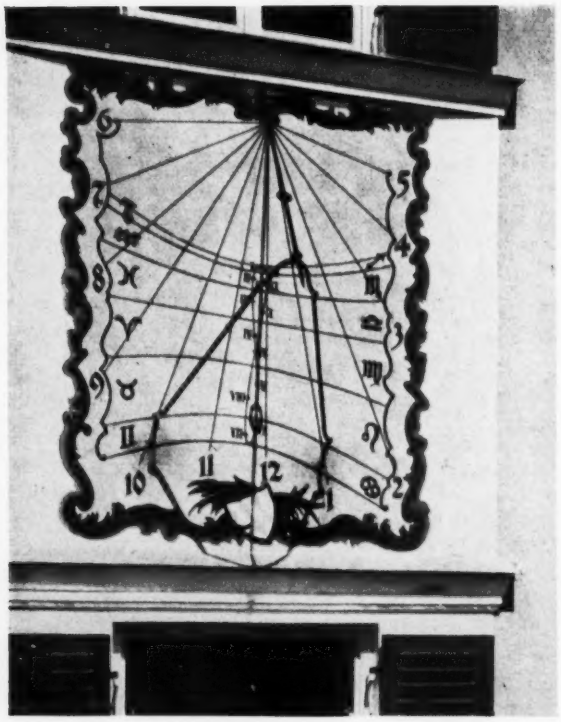
FOLLOWING the plan instituted in the August issue of AMERICAN ARCHITECT of providing authoritative reference data on modern materials and equipment, there appears in this issue a section devoted to mechanical refrigerating equipment. The subject is one of growing importance to the entire architectural profession, for the great majority of buildings must now contain refrigerating equipment of some sort, either for the preservation of foods and merchandise or for air conditioning, water cooling and other comfort purposes.

The article appearing on page 75 is a condensed and authoritative analysis of refrigerating equipment of all types. It does not seek to induce architects to become competent refrigerating engineers, but rather undertakes to supply such information as an architect may need when considering the selection of appropriate units. Stress is placed upon the major provisions of the industry's own American Standard Safety Code for Mechanical Refrigeration, which requires that the character of the installation be governed by the nature of the refrigerant employed and by the number of pounds of the refrigerant within the system. Inasmuch as these vital facts about unit or domestic refrigerators and many types of commercial and multiple systems have never been given by manufacturers in their advertising or sales literature, the advertisements appearing in conjunction with this reference section have especial reference value. As in the case of the reference data on oil burning equipment which appeared in August, the manufacturers have been urged to tell their story in terms of those facts that architects need and can use in their daily work.

XUM

Contemporary

ARCHITECT'S STUDIO. Hans Junghanns, architect, of Düsseldorf has "functionalized" the studio of his own house to a degree that clearly reveals its purpose. Notable is the curved track hung from the concrete ceiling which permits the movement of suspended lights to any desired point. From "Moderne Bauformen"



SUNDIAL on oblique wall, in fresco and wrought iron. From "Diekunst"

LIVING ROOM in a doctor's house near Leipzig, designed by Professor Adolf Rading. The owner's profession evidently inspired the character of the metal figures by Oskar Schlemmer which are used for decorative relief of the walls. The face is profiled in a projecting strip of metal. The tubular lights are noteworthy. From "Innen-Dekoration"

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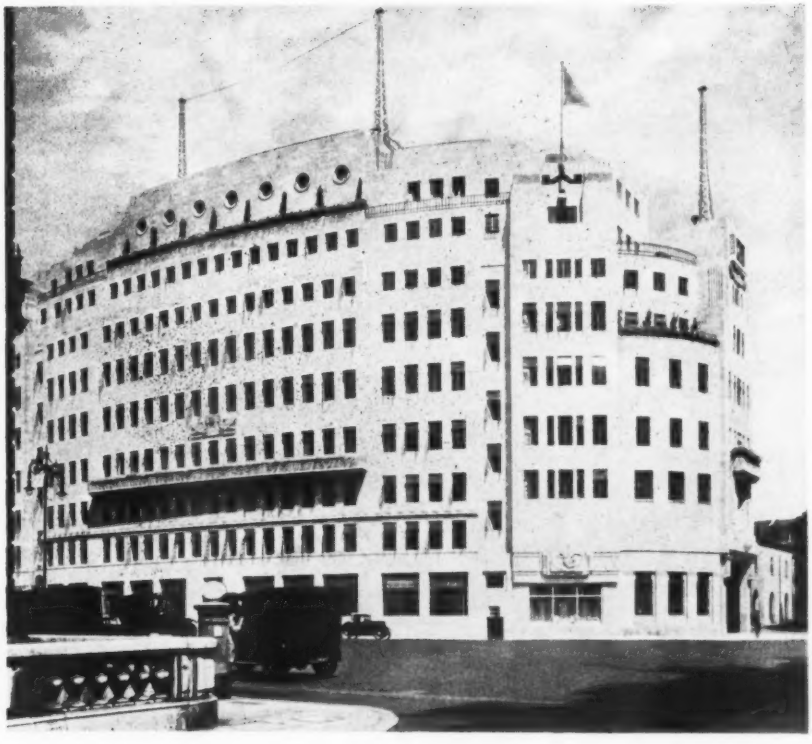
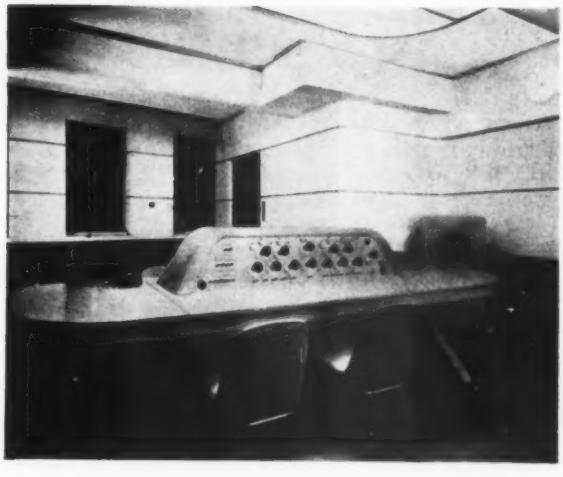
Work Abroad...



BROADCASTING HOUSE, London. Designed by G. Val Myer, F.R.I.B.A. for the "B.B.C." Perhaps respect for the traditional architecture of Portland Place played a part in the restrained exterior. Within the walls, tradition has been forgotten. From "The Architectural Review"

CONTROL ROOM for dramatic effects in Broadcasting House, London. In this room designed by Wells Coates, the producer of a radio drama may control and mix the production of ten or more studios, including a special sound effect room. From "The Architectural Review"



BLACK GLASS, contrasting with polished metal, makes the new Daily Express building the most prominent structure on London's Fleet Street. Herbert O. Ellis and Clarke, architects. From "The Architectural Review"

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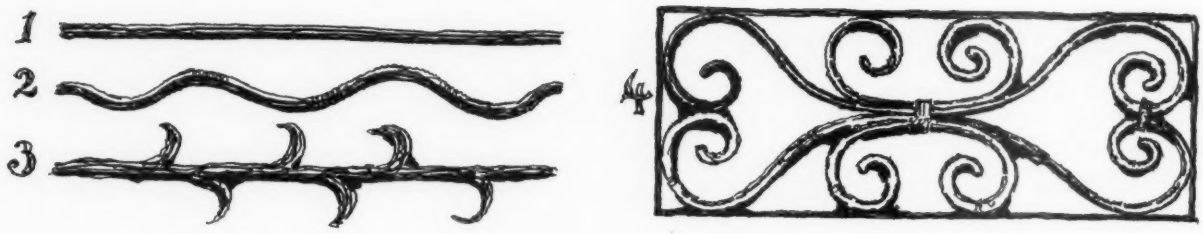


The historical development of grilles can be traced on a single street

Grilles of Old Marseilles

BY WILL PHIL HOOPER, SKETCHES BY THE AUTHOR

"Though we travel the world over to find the beautiful we must have it within us or we find it not."—Emerson.

FOR amusement one would naturally choose the company of a devil in preference to that of a deacon and, as Marseilles is called the wickedest city in France, perhaps that is the reason it is the most interesting of all.

For the artist, antique collector, or business grabber of "old stuff," this city has most alluring places full of interest and opportunity.

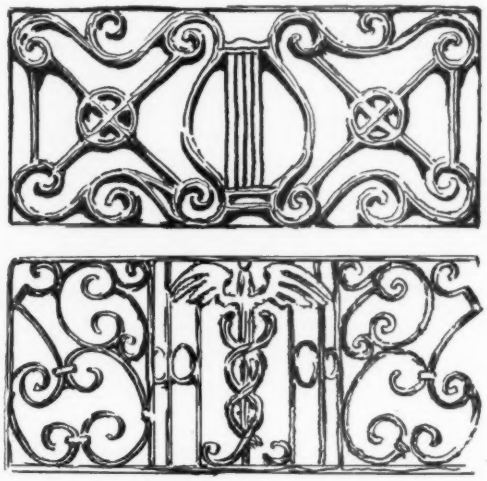
In the old congested section, the Rue des Hommes winds its way—the darkest, narrowest and dirtiest of streets. Here the sunshine penetrates only at high noon and the smells are as revolting as the creepy denizens shuffling out of their dens. Yet this neighborhood, this very street, was some four hundred years ago the Park Avenue of the city. Today the ruins of once palatial doorways, the battered but still beautiful old doors with their fascinating escutcheons and ornate transom grilles, are the only records of its former grandeur.

The houses, five to seven stories high with stone walls two feet thick, have stood so long that now they are inclined to sit down. Many are braced up by immense beams and timbers so the passageway is blocked to all teams. Plumbing, of course, was unknown at the time these mansions were built. The cobbled street arches slightly in the center and has its open sewers on each side. Safety suggests, for obvious reasons, that the pedestrian should keep to the middle of the road.

Sketching is not without its exciting moments. Watching your step is only half the battle; one eye must be turned aloft for no one knows when the housekeeper may be doing the chamber work.

To one interested in the old wrought-iron transom grilles this street is a mine of wealth, for the history of the development of grilles may be traced in this one street.

First came the plain iron bar placed horizontally or vertically to protect the opening over the door. The next step was to put a wave pattern into the bar, not so much for decoration as to more adequately fill the space so that one rod would give as much protection as two.



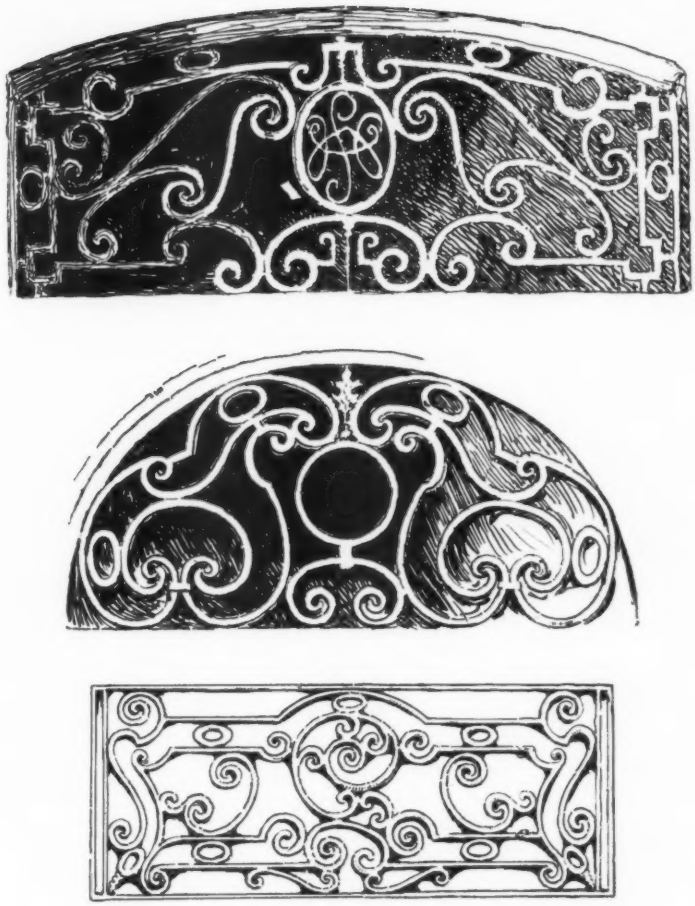
Grilles were designed for particular locations. The lyre and the caduceus shown above evidently identified the houses of a musician and a doctor

Then some inventive blacksmith conceived the notion of cutting into the hot iron bar so as to make branches. From the man who first wrought the hot iron bar into these crude branches came the idea of curves and scrolls for grilles, which gradually developed into the fascinating designs which have made the doorways of the "Midi" famous.

In carefully studying a thousand or more grilles in southern France, no two designs were found exactly alike. In many ornate patterns of the fourteenth and fifteenth centuries there is pronounced similarity, but in each one the artisan put a curve or twist which gave it a personality of its own.

Among the once stately mansions of the Rue des Hommes, as if for contrast, are a few little two-story houses, generally with three or four rough stone or broken concrete steps leading up to a small door with interesting panels and sometimes a fine old grille.

One particular house was unusual as it had not only the wreck of a fine door and a lovely antique grille but a curious old knocker with three elaborate escutch-



Four hundred years ago the Rue des Hommes was the Park Avenue of the city. Grilles, escutcheons, knockers and pulls are the only records left of its former grandeur. No two grille designs in Southern France are exactly alike

Vertical bars and a simple scroll design are an unusual combination. The old dolphin knocker, wrought handle and door pull remain intact, rare examples of the craft

eons. In front a stout old party wearing a wide red sash was busy sawing wood. He needed no saw-horse as the saw was held between his legs and, holding the wood in his hands, he rubbed it up and down on the teeth of the saw. He seemed mortified that his door was so old and explained apologetically that he soon was to have a *porte nouvelle*.

In the twelfth century the blacksmith received his iron in a lump and had to make this into a strap by pounding with a hammer preliminary to the making of a grille. Owing to the splendid quality of the metal at that time, the thirteenth century marks the top of the art of hand-wrought iron. Tools were anvil, hammer, tongs, chisel, punch, forge and bellows.

As one studies these hand-wrought grilles, there is always the intuitive assurance that each one was designed specially for its particular door, its house and its owner. This feeling is encouraged by the fact that many grilles bear a monogram, cypher or coat-of-arms —some personal emblem. For example, over the door of a musician's house a lyre was skillfully worked into the grille; at another house, probably that of a physician, the symbol of Mercury was suggested. Occasionally the date of the building of the house was inserted.

While making a sketch, I realized that one of my audience was not satisfied to just glance at my croquis and pass on, but hung by me breathing garlic hotly in my ear. No sooner was the sketch finished when my observant onlooker suddenly became excited. He touched me gently on the arm, pointed up the street and with the most polite and alluring manner essayed to take me with him.

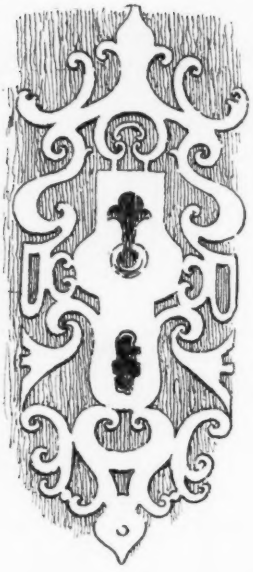
I found my alleged French as useless as a sixty-nine cent watch and his talk as clear to me as the Einstein theory to a policeman. However, I ambled along with him, my curiosity piqued to learn the motive of my firm though courteous guide. Finally we came to a group of busy workmen. With a look of triumph he pointed out what was evidently the object of our quest—a *new* cast-iron grille!

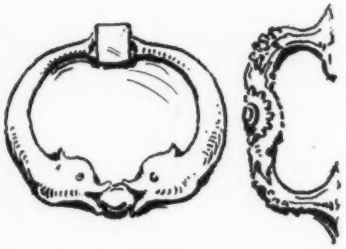
My embarrassment was relieved by a man in the crowd saluting me, "How-do- good-day me speak de englis—in de New York tree years." Then after a few words with my puzzled guide, he explained it all.

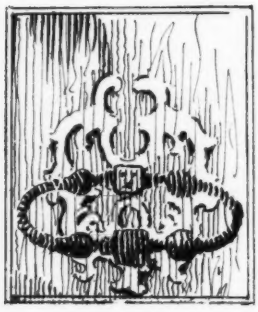
"Mister, this man he thinks you better like to make picture of nice new grille than to make a picture of old

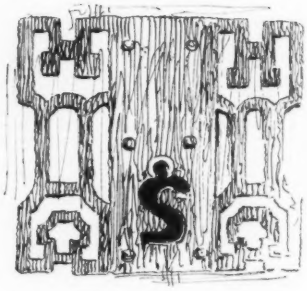
XUM

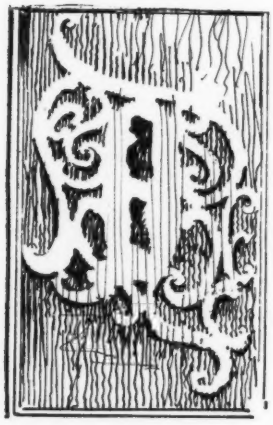
Iron Details From Old Marseilles

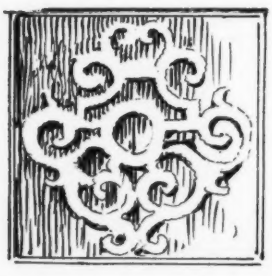












rusty old-fashion grille. So he bring you here to see the fine new grille that his brother buy for his shop."

Such misplaced kindness deserved recognition. So I invited the guide and the interpreter to "Have one on me." We crossed the street to a wine-shop, where after conversation and liquor had flowed freely I asked M. Vedene, "Are you ever going back to New York?"

"New York," he replied, "No, me no go back to New York no! Too much work in New York—here me no work!" And no wonder! Why should he go back to New York and work? The old woman scrubbing the bar-room floor was his mother, the other elderly female cleaning the tables was his sister; while his wife, a buxom woman of perhaps thirty, was industriously polishing the bar. Forsooth, why should he work?

Returning to the Rue des Hommes, I found an interesting old door. It was six feet high and the grille was four, with a roughly modeled head at the top. The grille was unusual as it combined vertical bars with a simple scroll design.

The original door knocker—a pair of dolphins—was still in place. Also a finely wrought handle, a door-pull, in a good state of preservation.

Many of the old doors in southern France were made in three parts; a wide leaf in the center to which one leaf is permanently fixed, the third hinged to the door-frame and opened only on special occasions.

A beautiful door of this character I found near the beginning of the Rue des Hommes. Above was a carved head of a cavalier with big hat, flowing plumes and festoons; below this a wonderful grille, then the old battered but elegant door. The storm and stress of centuries could not efface the charm of this entrance. The door knocker was missing.

I stopped work and returned to the wine shop of M. Vedene.

Houses Are For Children, Too

A woman tells what architects should consider to make houses more livable

BY RUTH LEIGH

Together with three pages of details of children's requirements specially drawn, for this article, by Charles G. Ramsey, A.I.A., and Harold R. Sleeper, A.I.A., authors of "Architectural Graphic Standards"

IT was my third week of unsuccessful suburban house hunting and I was growing somewhat discouraged. Consequently, when the energetic real estate woman who had been showing me around, telephoned that she had "a listing of a charming French Provincial house—a marvelous bargain—," I answered quickly: "Yes, I'm ready. Come right over."

It *was* a charming house, sitting in the sunshine—whitewashed brick, unfinished timber, and a round, pointed story-book tower effect that immediately won me. We turned off the motor and observed it from the car. "It's supposed to be one of the most attractive houses in town," the real estate woman said. "It was designed by So-and-So (she mentioned the name of a nationally famous American architect)."

We walked up the flagstone path, and then and there I decided that this was going to be my home. Imagine my shock, therefore, when on going through the house I found that as charming as it had seemed outside, it was equally unattractive inside! A too-small, badly proportioned living room, gloomy, narrow halls, a kitchen with poor light, and an entirely inadequate master-bedroom.

"Here's something unusual," called the real estate woman. "A bedroom up two steps."

I went over, hoping for a big surprise, and found merely another stuffy bedroom with two tiny casement windows. In fact, throughout the house, the windows were all too small.

By this time, I realized that the house was quite impossible so I turned to the real estate woman. "It won't do. It's too badly arranged. I can't imagine how such a charming looking house could have been so terribly chopped up."

Observing my firmness, the real estate woman grew confidential:

"I find that true of all So-and-So's houses" (mentioning the name of the architect). "They're charming on the outside, but somehow when you get inside, you're always disappointed."

"Well, one doesn't live on the outside," I observed brightly.

I mention this particular incident not that, in itself, it is very important, but because I think architects may be interested in these frank comments from an average housewife. I don't pretend to know much about art and architecture, but I do contend that in designing homes, some architects are inclined to forget that houses exist for families, rather than families for houses. In other words, although I, a housewife, want a charming house that my friends and neighbors will admire, I must, too, have comfort and livability. After all, I spend the greater part of my life in that house, and so do the children. If the rooms are not the right size or proportion, if the windows are too small, if the house isn't conveniently arranged to make housework easier, well, from my viewpoint, no matter how artistic the exterior, that house is a failure.

I am not trying to tell architects how to design livable houses. I merely wish to point out a few often-overlooked features that contribute, especially when there are children, to family comfort and adult convenience.

THE first deals with the sun porch which, in the average suburban home, serves as a sort of secondary living room. Especially where there are children, it is used to "save" the living room. For that reason, I often wish that the sun-porch could be reached by another door than through the living room. Usually, the sun porch opens outdoors and that is fine, but here is what happens: Children come in from outside with muddy or sandy feet (from the sandbox), and to go upstairs, go through the living room. Consequently, the living room isn't saved very much. As I have cleaned up muddy footprints, I have often wished that there were another way of getting upstairs from the sun porch without passing through the living room.

As a matter of fact, in planning a house for a family with children, I maintain that you must consider an entirely different set of living habits. For one thing, there's the question of closets. Although intended for the use of both adults and children, most hall closets are adult affairs. Modern child-training demands that we encourage our children to be independent and to help themselves, even at the early age of two or three years. They must learn to hang up their own hats and coats and put them on. When planning hall closets for homes with children, may I suggest that architects include a row of low hooks for little coats and sweaters and a low shelf for hats, mittens, roller skates and school books? Also a special low shelf near the floor, *with divided compartments*, that will keep rubbers and overshoes *in pairs*. And, please, plenty of light in hall closets, so mothers won't have to grope blindly in the dark to meet the inevitable: "I did look in the hall closet, mother, and my rubbers simply aren't there." (*Continued on page* 96)

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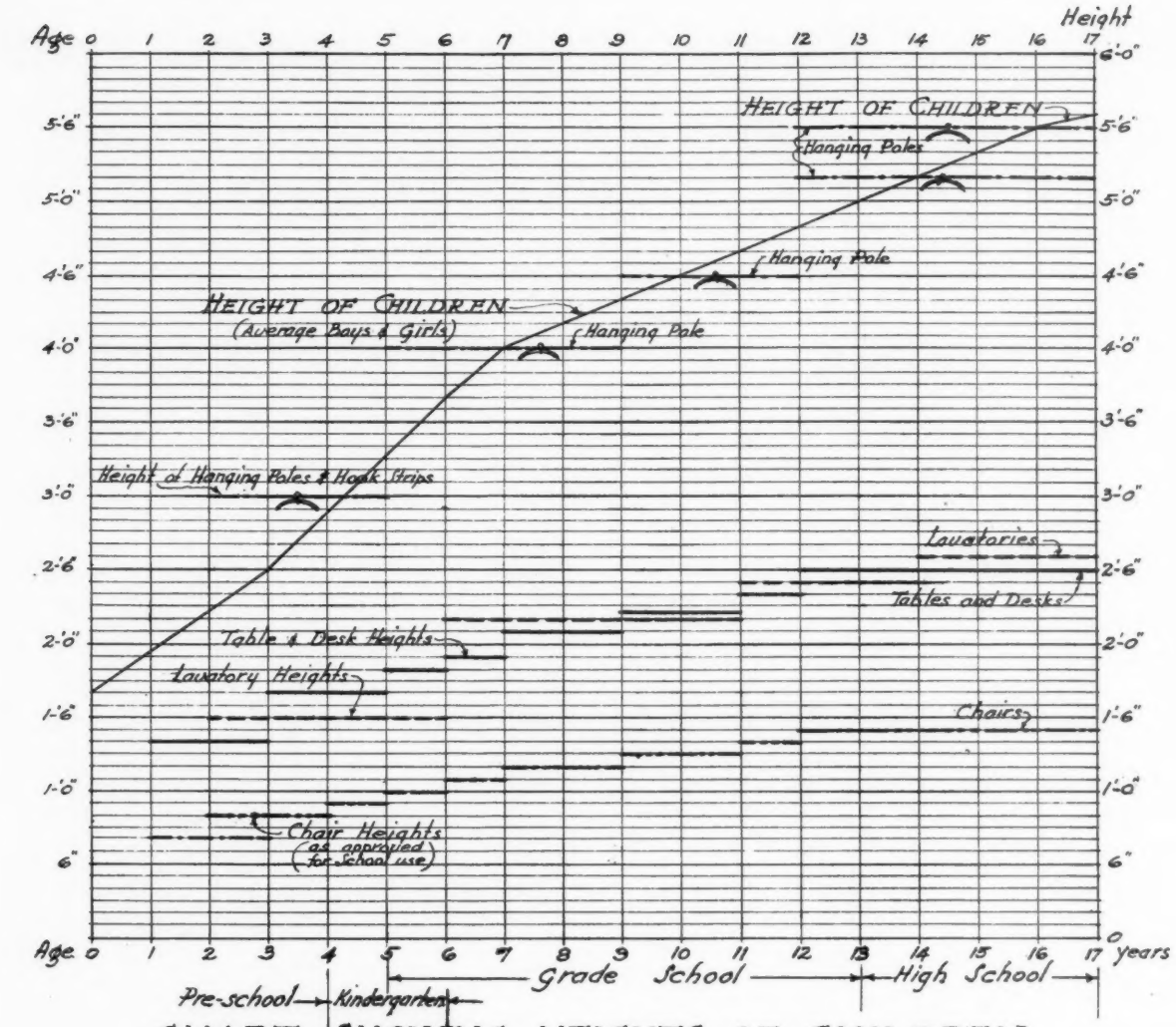
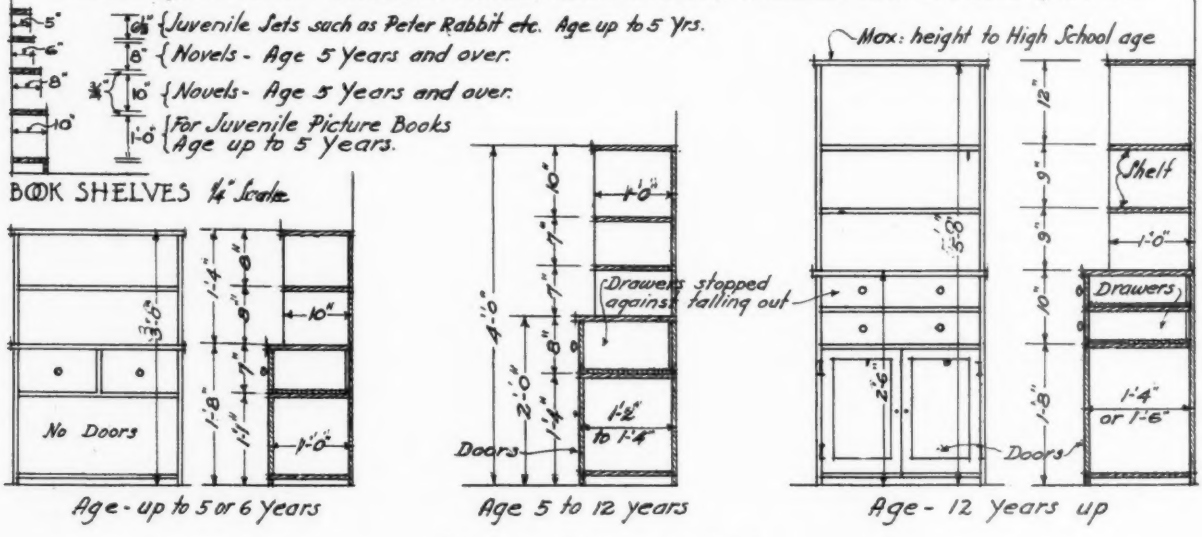


CHART SHOWING HEIGHTS OF CHILDREN

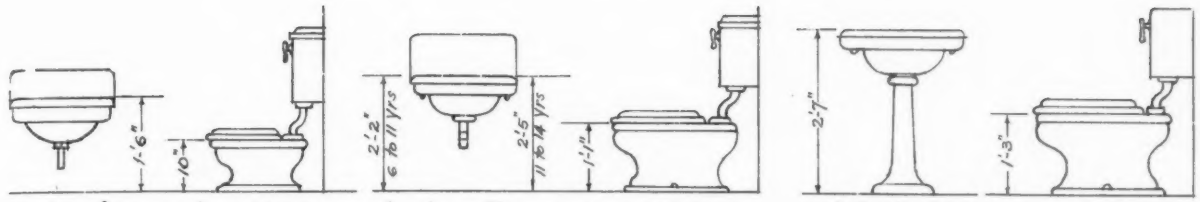
ALSO HEIGHTS OF HANGING POLES, HOOK STRIPS, TABLES, LAVATORIES & CHAIRS


{Juvenile Sets such as Peter Rabbit etc. Age up to 5 Yrs.
{Novels - Age 5 Years and over.
{Novels - Age 5 Years and over.
{For Juvenile Picture Books Age up to 5 Years.
BOOK SHELVES 1/4" Scale
No Doors
Age - up to 5 or 6 Years
Drawers stopped against falling out
Doors
Age 5 to 12 years
Max: height to High School age
Shelf
Drawers
1-4" or 1-6"
Doors
Age - 12 years up

SCALE: 1/2" = 1 FOOT

CHILDREN'S TOY SHELVES AND CUPBOARDS

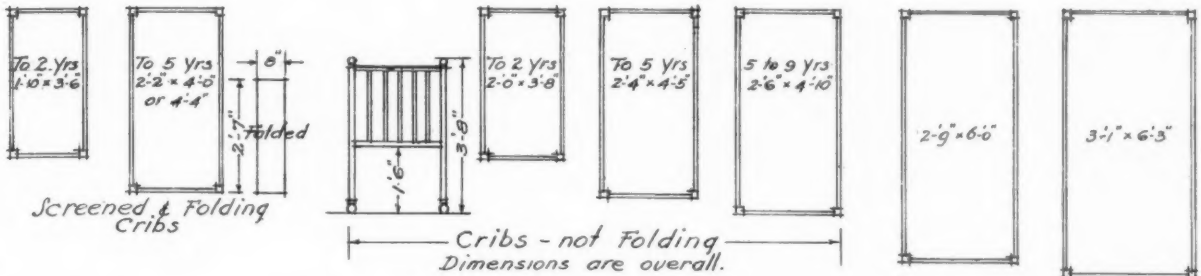
DATA ASSEMBLED AND DRAWN BY CHARLES G. RAMSEY AND HAROLD R. SLEEPER



Baby Size up to 6 Years. Junior Size 6 to 12 Years. Adult. Size 12 years & up.

PLUMBING FIXTURES

3/8"=1'-0"



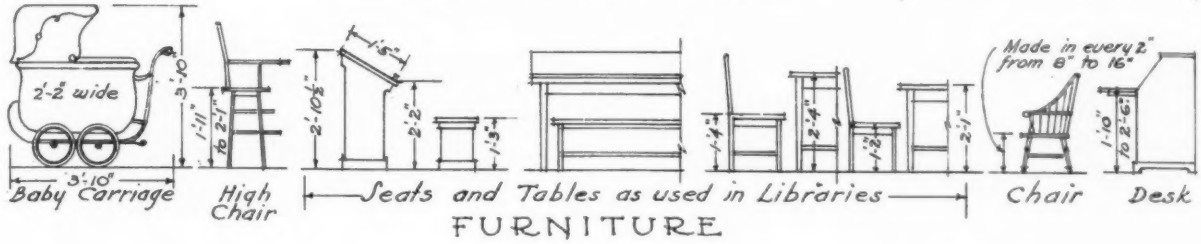
Screened & Folding Cribs

Cribs - not Folding

Dimensions are overall.

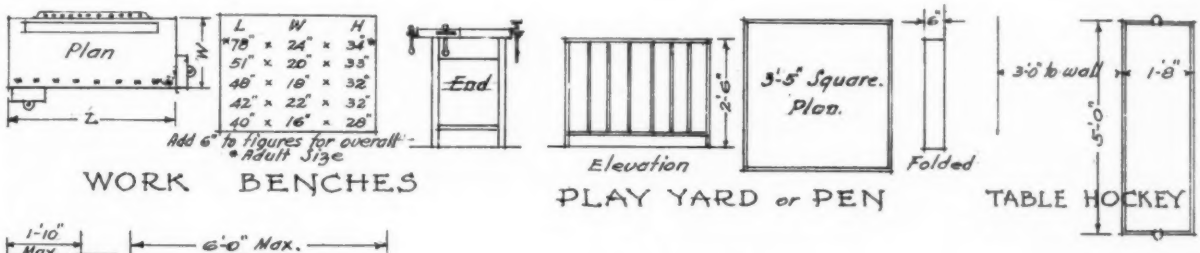
CRIBS AND BEDS

Junior Beds



Baby Carriage High Chair Seats and Tables as used in Libraries Chair Desk

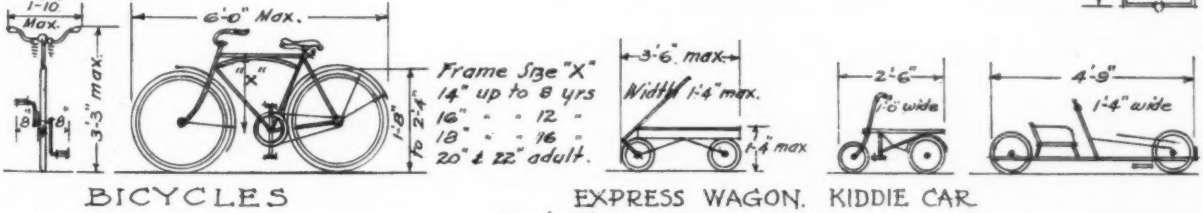
FURNITURE



WORK BENCHES

PLAY YARD or PEN

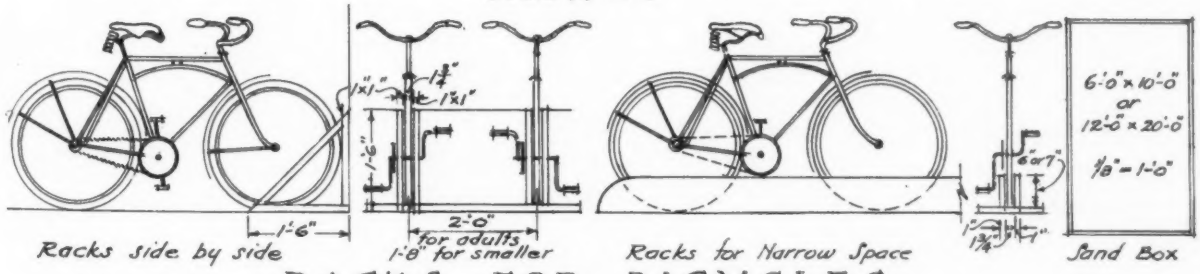
TABLE HOCKEY



BICYCLES

EXPRESS WAGON. KIDDIE CAR

Scale ¼"=1'-0"



Racks side by side Racks for Narrow Space Sand Box

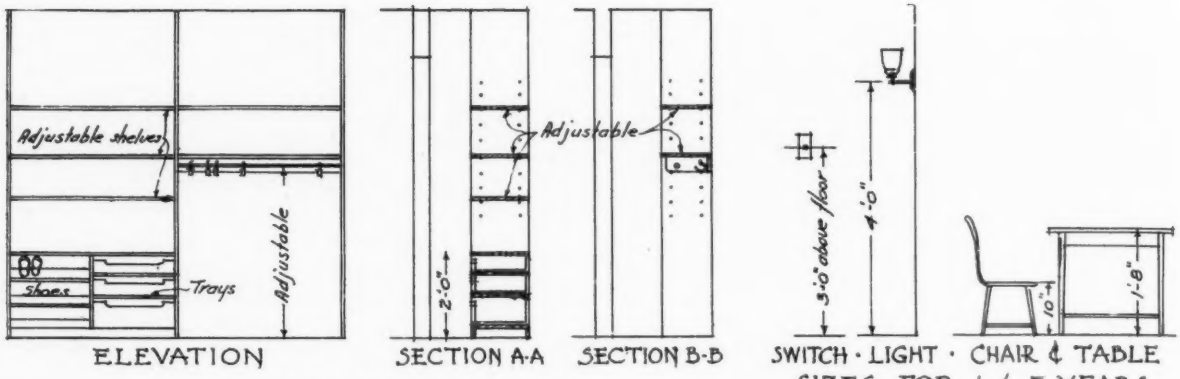
RACKS FOR BICYCLES

⅜"=1'-0

FIXTURES, FURNITURE, TOYS AND GAMES FOR CHILDREN

DATA ASSEMBLED AND DRAWN BY CHARLES G. RAMSEY AND HAROLD R. SLEEPER

XUM



ELEVATION SECTION A-A SECTION B-B SWITCH · LIGHT · CHAIR & TABLE

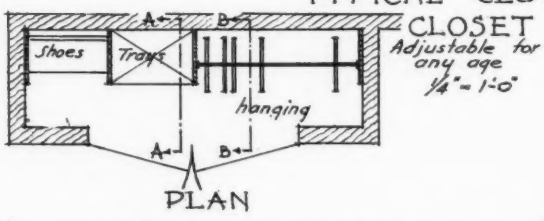
TYPICAL CLOTHES CLOSET

Adjustable for any age

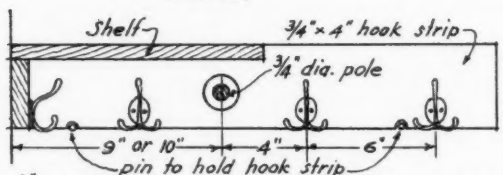
1/4" = 1'-0"

SIZES FOR 1 to 5 YEARS

3/8" = 1'-0"

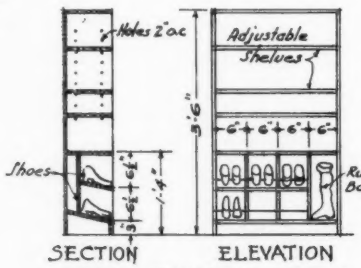


PLAN



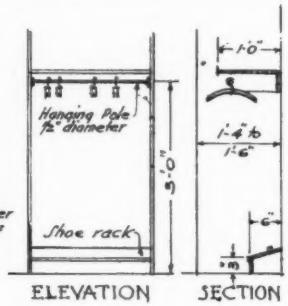
1½" DETAIL of HOOK STRIP ETC.

1½" = 1'-0"



SECTION ELEVATION

BOOK SHELVES WITH SHOE or RUBBER RACKS UNDER

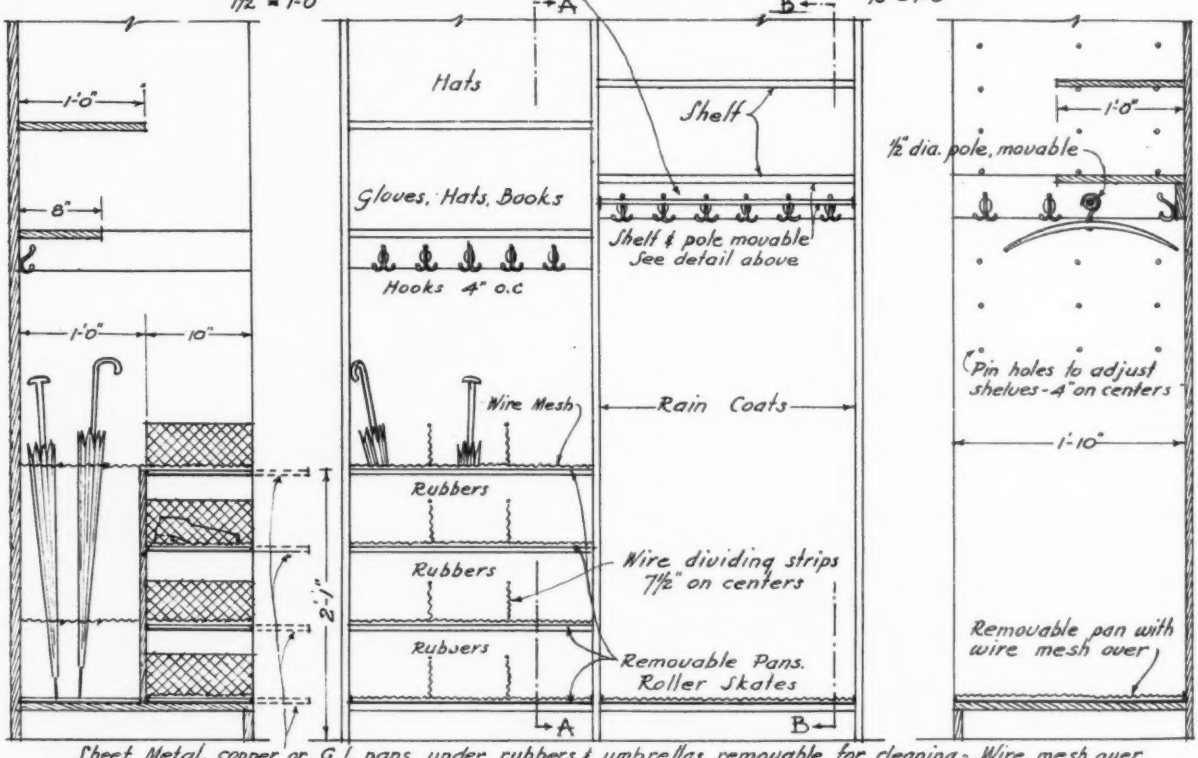


ELEVATION SECTION

HANGING CLOSET

SIZES for 1 YEAR TO 5 YEARS

3/8" = 1'-0"



Sheet Metal, copper or G.I. pans under rubbers & umbrellas removable for cleaning - Wire mesh over.

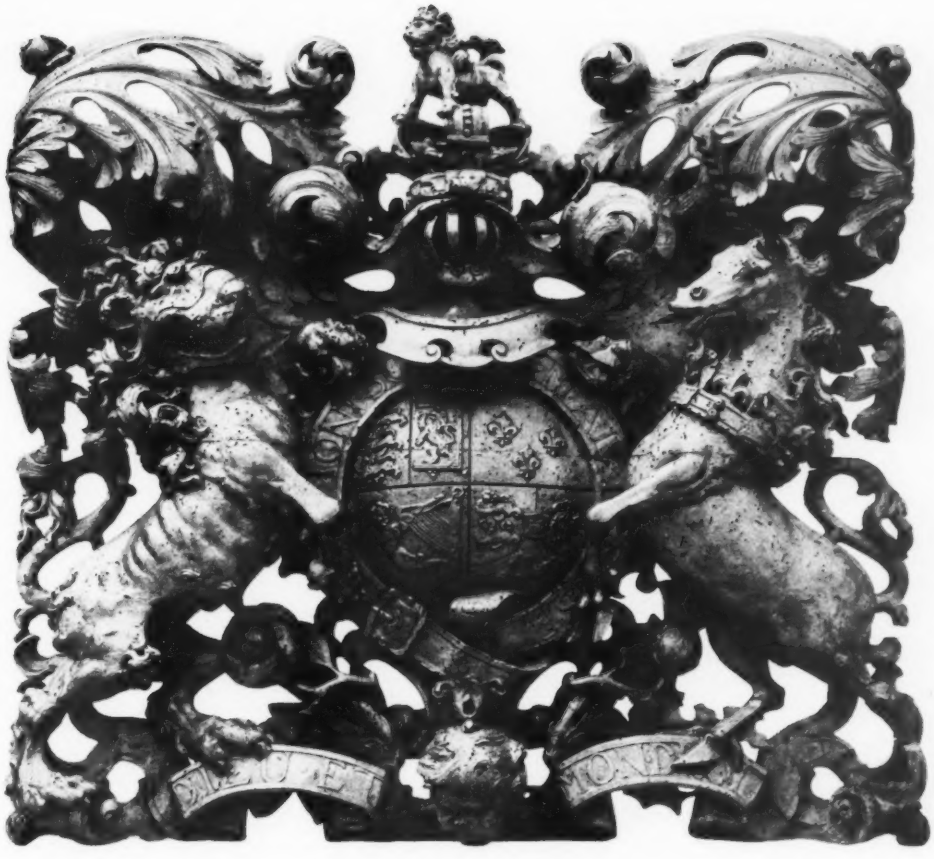
SECTION A.A. ELEVATION SECTION B.B.

CLOSET FOR UMBRELLAS, SLICKERS, RUBBERS

3/4" = 1'-0"

ADJUSTABLE FITTINGS FOR CHILDREN'S CLOSETS

DATA ASSEMBLED AND DRAWN BY CHARLES G. RAMSEY AND HAROLD R. SLEEPER



Limewood panel in the style of Grinling Gibbons. Coat-of-arms of George I. Early eighteenth century. Courtesy The Metropolitan Museum of Art, New York.

STATE COLLEGE OF AGRICULTURE AND APPLIED SCIENCE
LIBRARY
NOV 10 1932
MANHATTAN
KANSAS

PLATE SECTION

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XUM

VALLEY BANK AND TRUST COMPANY BUILDING
PHOENIX, ARIZONA

MORGAN, WALLS AND CLEMENTS, ARCHITECTS
H. H. GREEN, ASSOCIATE ARCHITECT

DETAIL OF MAIN ENTRANCE

VALLEY BANK AND TRUST COMPANY BUILDING, PHOENIX, ARIZONA, MORGAN, WALLS AND CLEMENTS, ARCHITECTS.
H. H. GREEN, ASSOCIATE ARCHITECT

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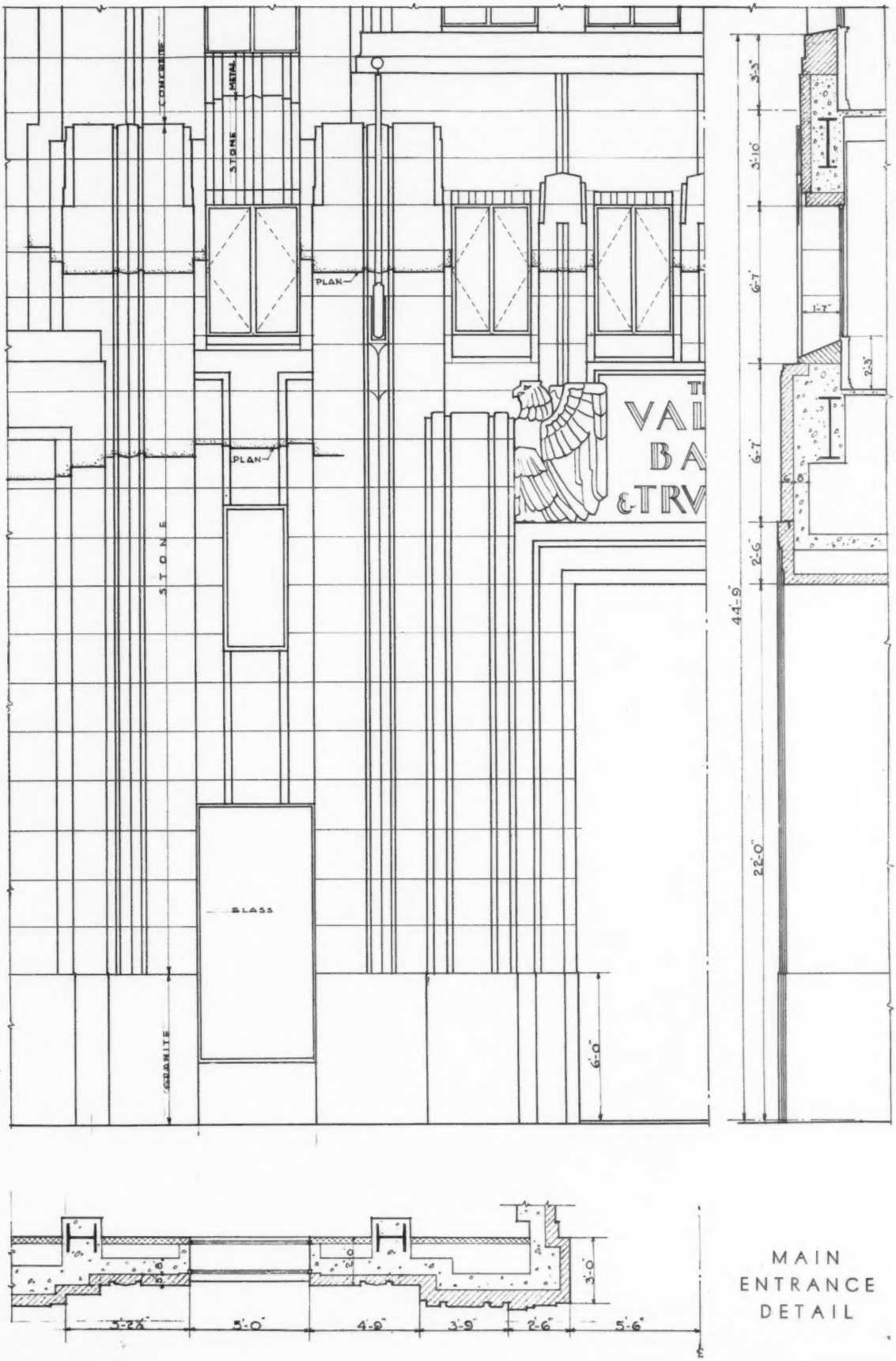
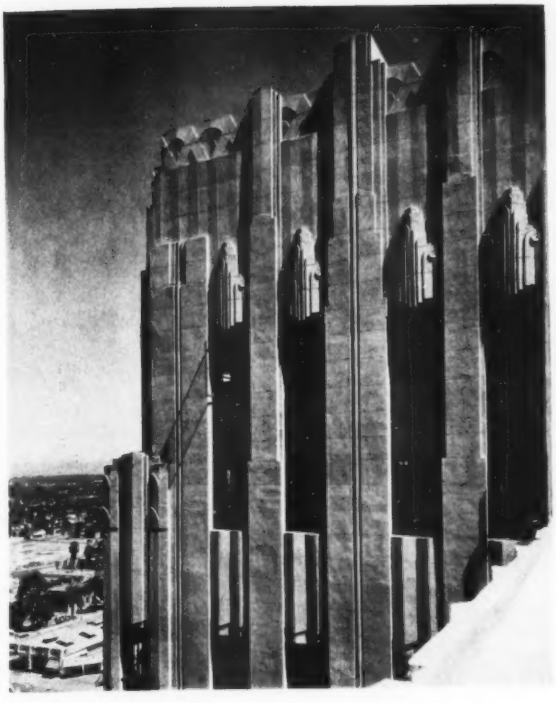


MAIN ENTRANCE DETAIL



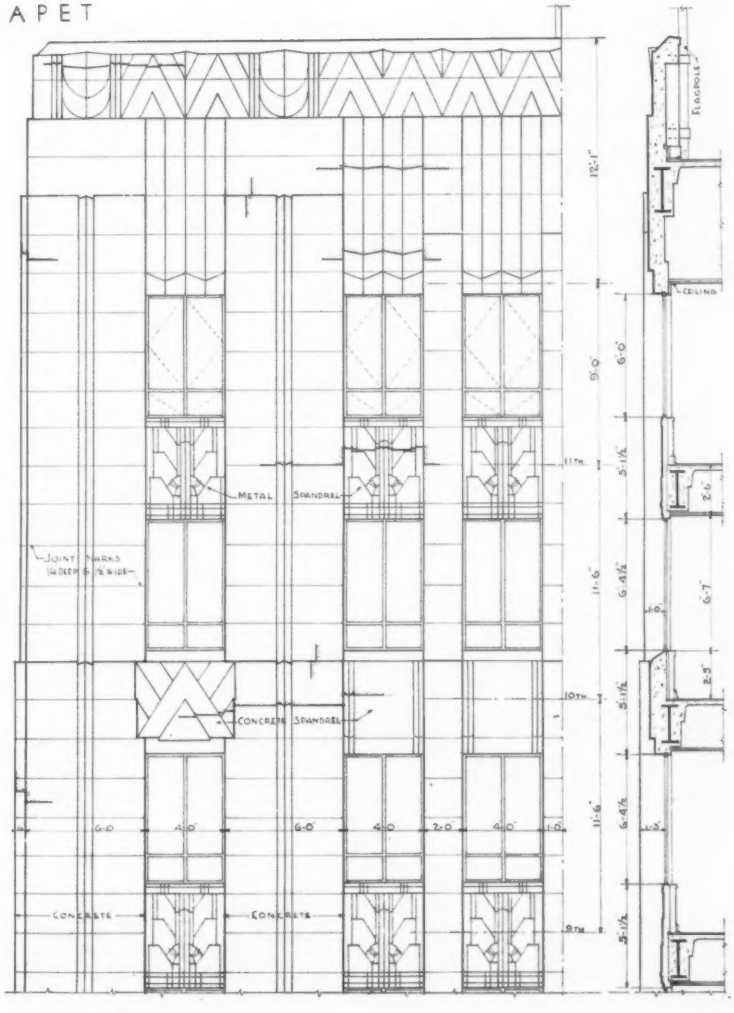
CONSTRUCTION DATA: Exterior, lower stories, limestone; upper stories, concrete. Spandrels, concrete and metal. Entrance doors, bronze. Elevator lobby: marble floor and walls; cast plaster ceiling; cast bronze elevator doors. Windows, steel frames and sash. 60-car garage in basement. Upper floors planned for professional tenant occupancy. Air conditioning system throughout. Bank: floor, marble; screen, wood and metal; acoustic material on walls and ceiling; work space, linoleum floors. Completed February, 1932. 2,066,000 cubic feet, net rentable area above first floor, 69,420 square feet. Cost $950,000 exclusive of bank quarters

DETAIL OF TOWER PARAPET

VALLEY
BANK AND TRUST
COMPANY BUILDING
PHOENIX, ARIZONA

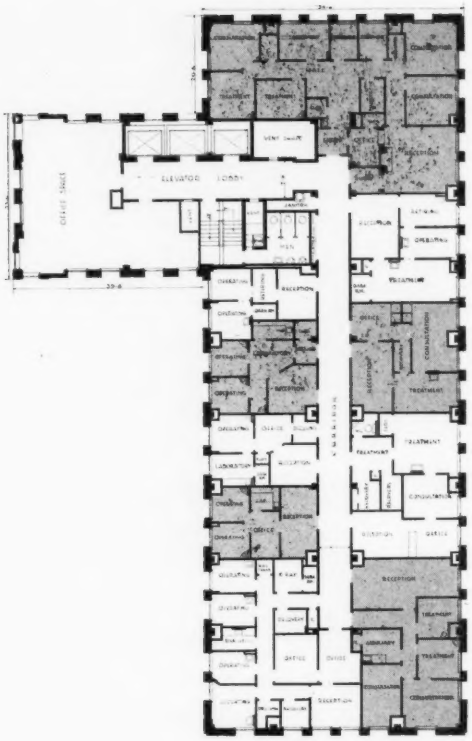
MORGAN, WALLS AND CLEMENTS
ARCHITECTS

H. H. GREEN
ASSOCIATE ARCHITECT

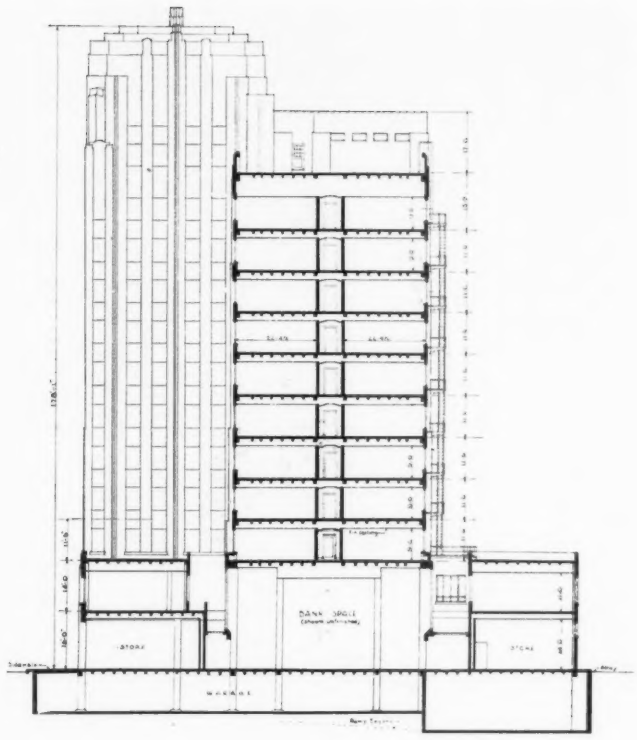


DETAIL OF PARAPET
MAIN ENTRANCE FACADE

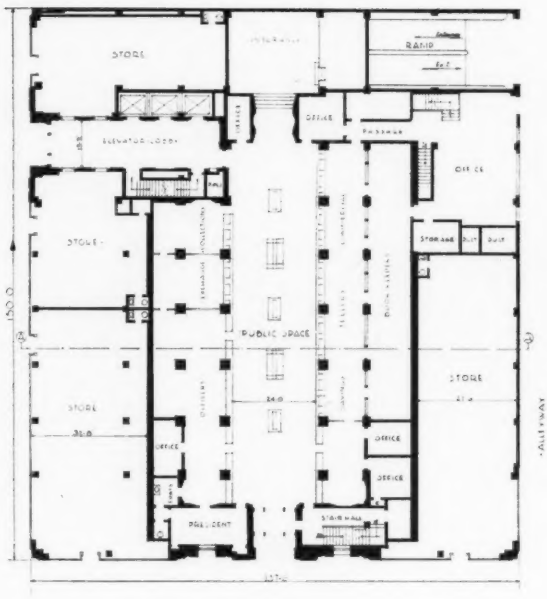
XUM



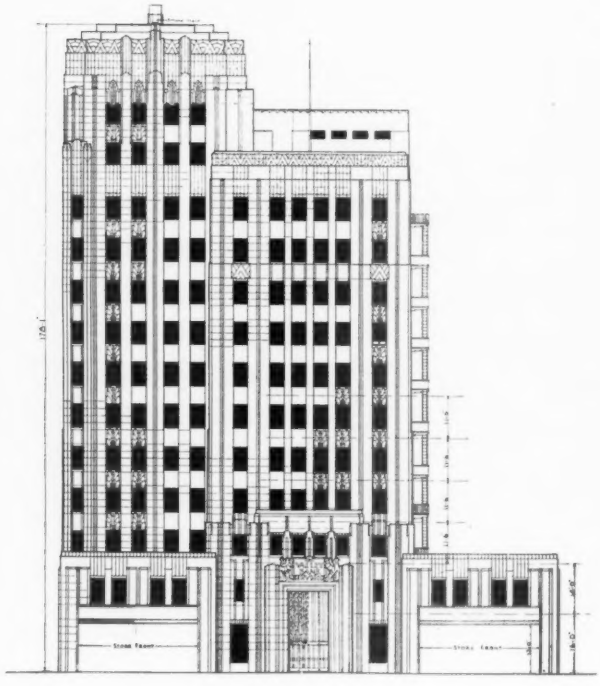
TYPICAL FLOOR PLAN



SECTION THROUGH MAIN PORTION OF BUILDING



FIRST FLOOR PLAN



MAIN ELEVATION

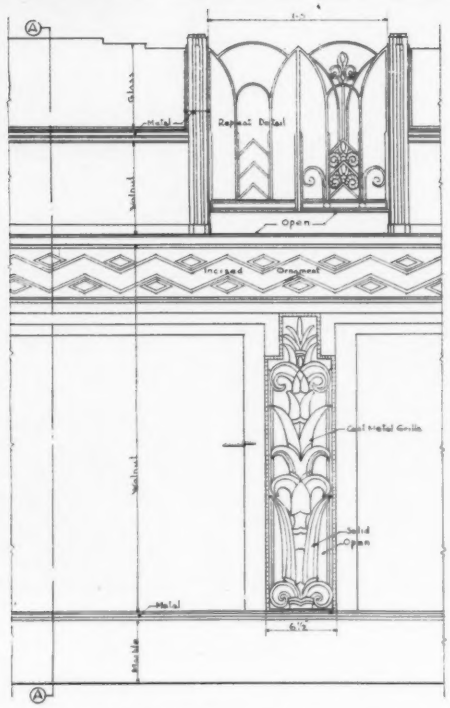
VALLEY BANK AND TRUST COMPANY BUILDING, PHOENIX, ARIZONA. MORGAN, WALLS AND CLEMENTS, ARCHITECTS
H. H. GREEN, ASSOCIATE ARCHITECT

DETAIL OF BANKING ROOM

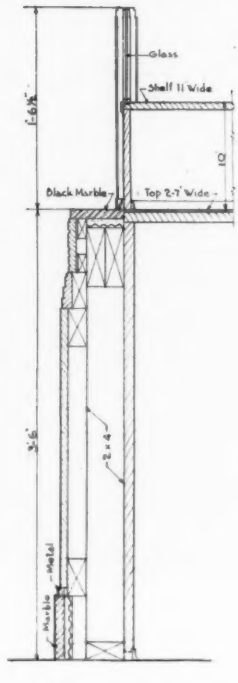
VALLEY BANK AND TRUST COMPANY BUILDING, PHOENIX, ARIZONA, MORGAN, WALLS AND CLEMENTS, ARCHITECTS, H. H. GREEN, ASSOCIATE ARCHITECT

XUM

DETAIL OF BANK SCREEN



ELEVATION



SECTION

VALLEY BANK AND TRUST COMPANY BUILDING, PHOENIX, ARIZONA, MORGAN, WALLS AND CLEMENTS, ARCHITECTS, H. H. GREEN, ASSOCIATE ARCHITECT

GLASGOW

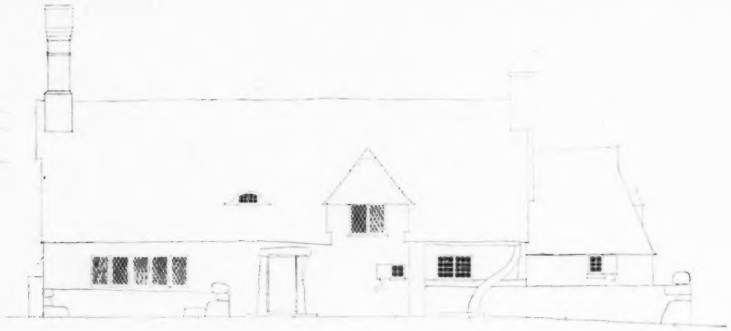
HOUSE OF A. F. TRAVERS, SHORT HILLS, NEW JERSEY

BERNHARDT E. MULLER, ARCHITECT

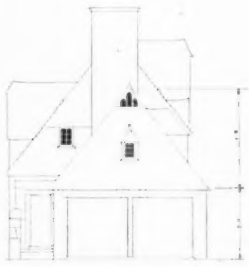
PHOTOGRAPHS BY ROBERT M. GLASGOW

XUM

GLASGOW



FRONT ELEVATION



END ELEVATION.

REAR ELEVATION

END ELEVATION

HOUSE OF A. F. TRAVERS, SHORT HILLS, NEW JERSEY, BERNHARDT E. MULLER, ARCHITECT

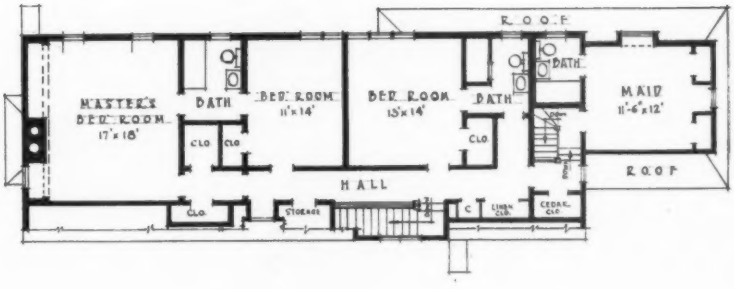
GLASGOW

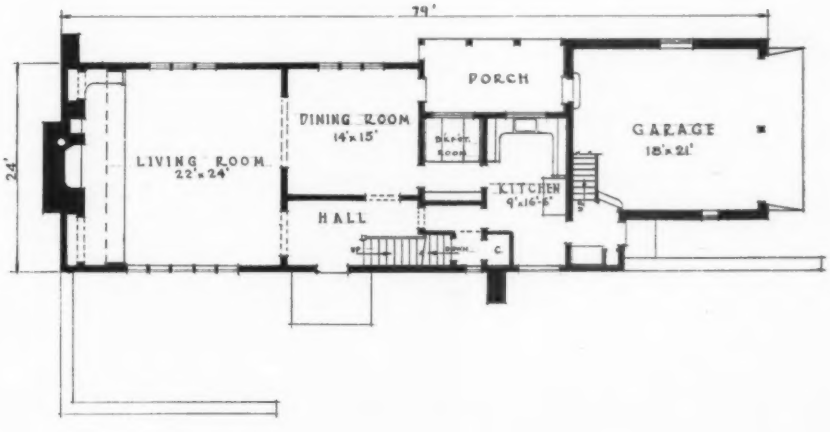
MATERIALS

Construction: metal lath, stucco tinted a weathered yellow. Garage walls clinker brick. Roof, slate in variegated colors laid close to the weather and varying in thickness from 1½ inches at eaves to ¼ inch at ridge. Half timbering and trim, oak, adzed, stained green, whitewashed and scrubbed with wire brush

•

The center second-floor bathroom has a long shower compartment with tile sides and bottom. This is pitched and provided with drain and stopper so that it can be used as tub and shower. 46,000 cubic feet. Cost, 70 cents a cubic foot. Built in 1929





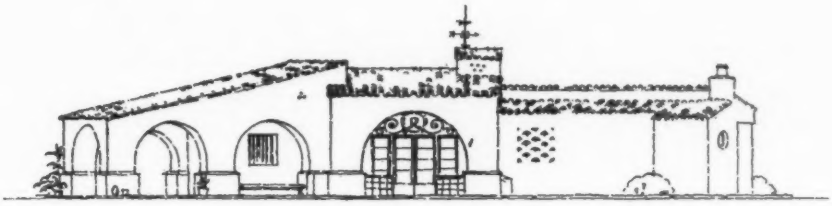
XUM

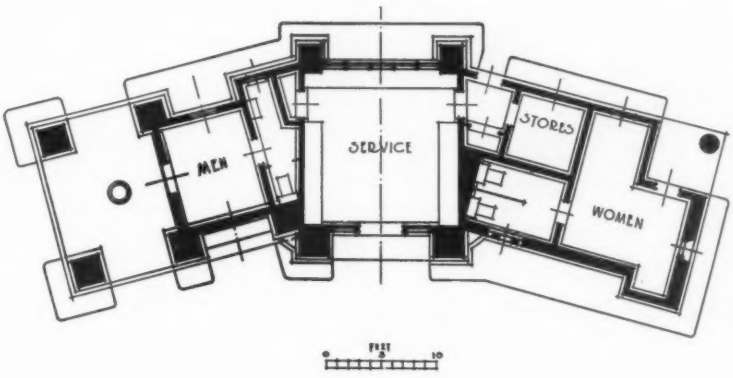
HOUSE OF
A. F. TRAVERS
SHORT HILLS
NEW JERSEY

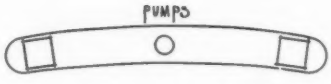
BERNHARDT E. MULLER
ARCHITECT

GLASGOW

MOTT STUDIOS





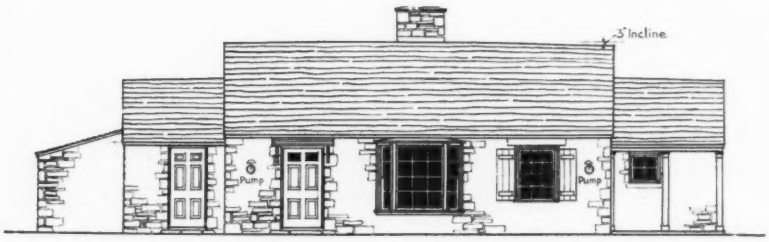


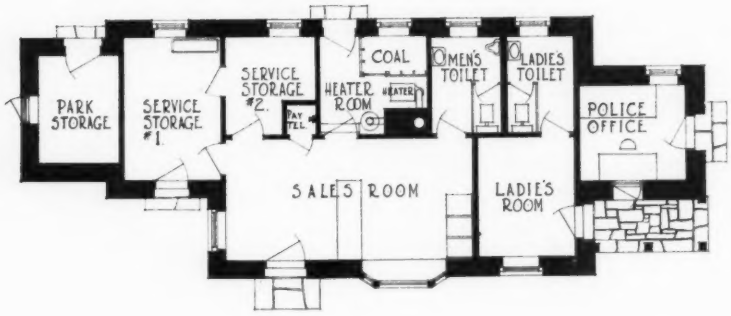
SERVICE STATION FOR THE RICHFIELD OIL COMPANY
EDWIN E. MERRILL, ARCHITECT

FOUR SERVICE STATIONS

XUM

COSTAIN

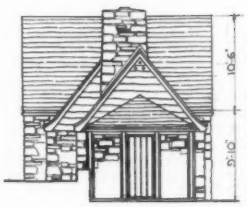


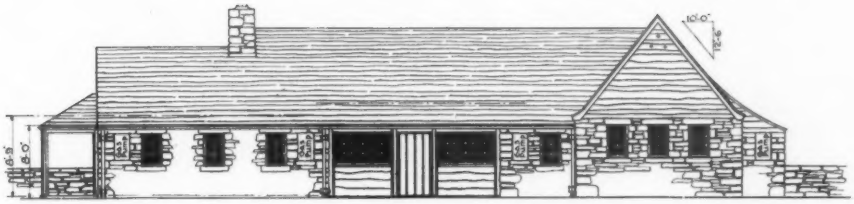


The service station problem of the Westchester, N. Y., park system has been well studied both as to appearance and relation to traffic. The stations are reached by a by-pass road paralleling the main highway. The one shown on this page is on the Hutchinson River Parkway. It is built of local stone. Gable ends are shingle and the roof is of slate. Its cost, including pumps, exclusive of grading and paving, was $15,000

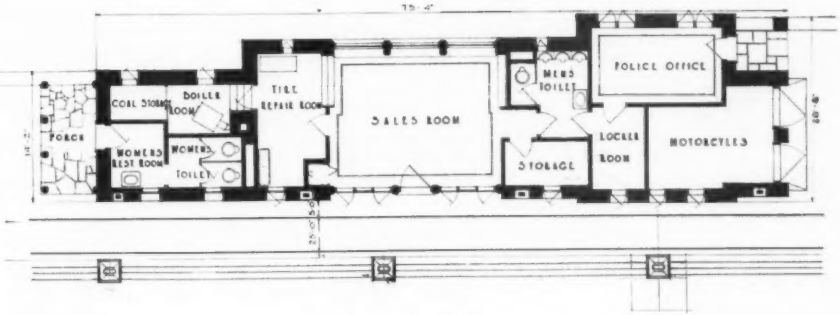
SERVICE STATION, WESTCHESTER COUNTY PARK COMMISSION, PENROSE V. STOUT, ARCHITECT

COSTAIN



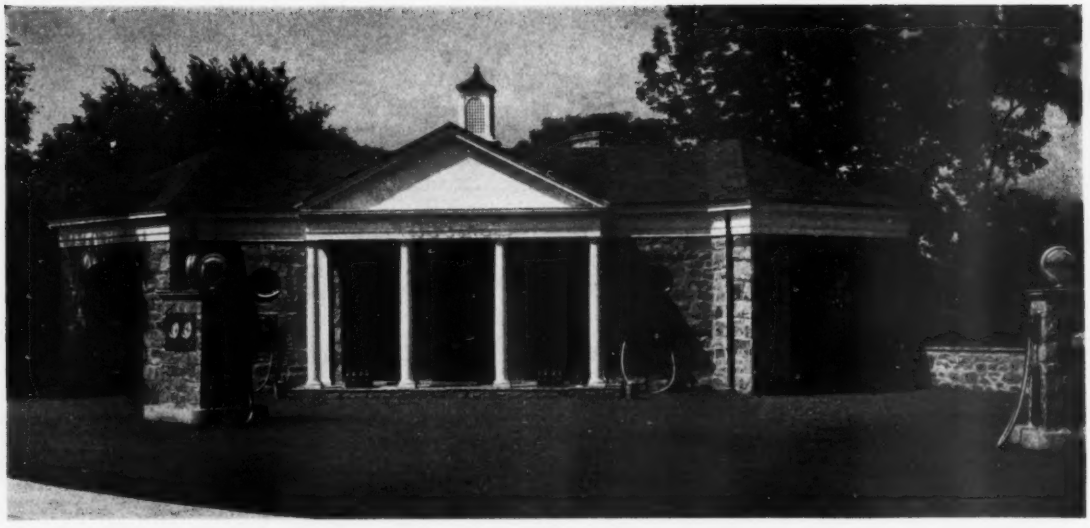


A parkway service station and police office combined. It is located on the Sawmill River Parkway. Exterior is of local stone. Gables are of cedar siding and roof of wood shingles. Interior finished with tile walls, plaster ceiling and cement floor. Note method of recessing pumps. Cost, exclusive of grading and paving, $21,700

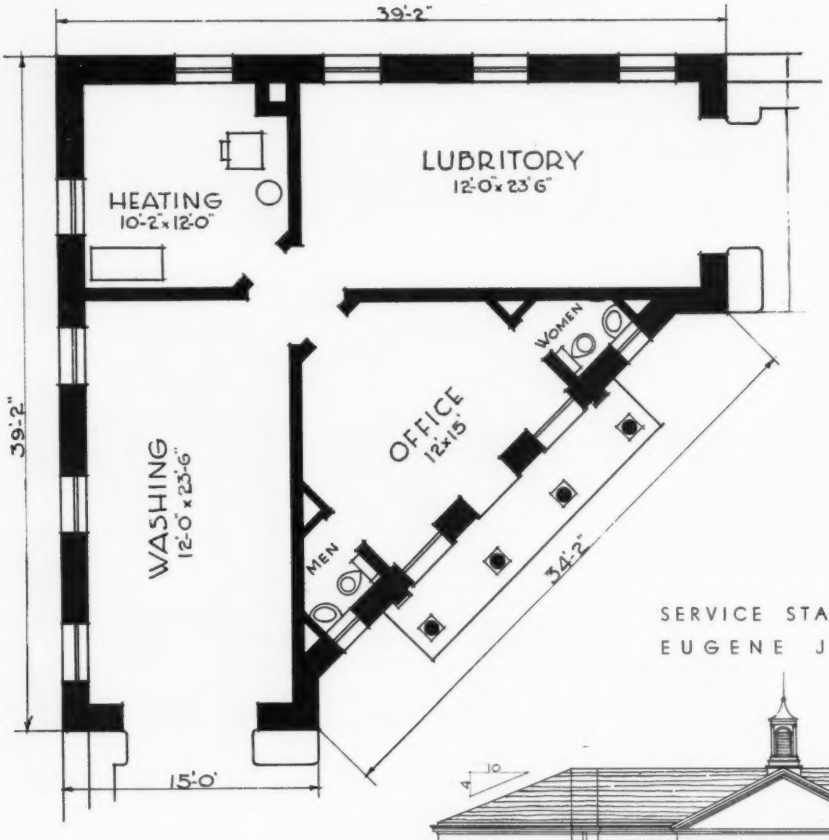


WESTCHESTER COUNTY PARK COMMISSION, CLINTON LOYD, ARCHITECT, GILMORE CLARK, LANDSCAPE ARCHITECT

XUM

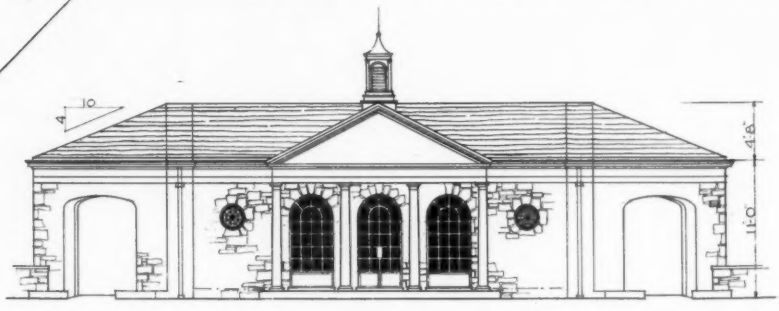


COSTAIN



Colonial character to harmonize with nearby structures and the elimination of objectionable signs were requirements of the problem. Exterior: local stone, wood trim and black slate roof. Interior: brick walls cement finished and painted; ceilings, cement mortar on metal lath; doors kalamein. Ventilating ducts exhaust through cupola. Copper leaders and gutters. Pumps built in stone pylons and recessed in walls. Sloping site required retaining walls, fill and reinforced concrete floor. Estimated cost on a level site, $11,500; mechanical equipment, $3,500. 19,000 Cu. Ft.

SERVICE STATION, SCARSDALE, N. Y.
EUGENE J. LANG, ARCHITECT



STATE COLLEGE OF AGRICULTURE AND APPLIED SCIENCE
LIBRARY
NOV 10 1932
MANHATTAN
KANSAS

THREE HOUSES IN COLONY HILL, WASHINGTON, D. C.

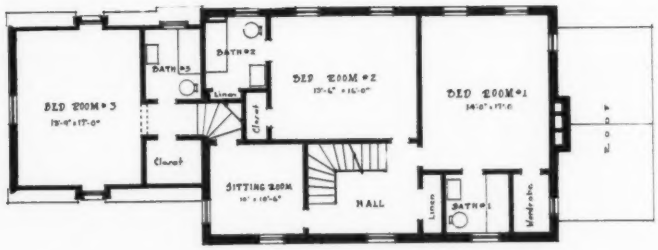
DESIGNED FOR AND BUILT BY
BOSS AND PHELPS

HORACE W. PEASLEE, ARCHITECT, GERTRUDE SAWYER, J. H. LAPISH, ASSOCIATES

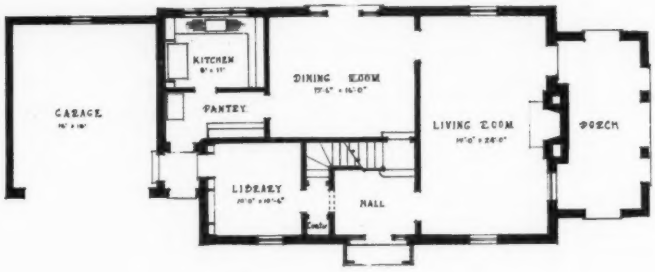
ROSE GREELY, LANDSCAPE ARCHITECT

Photographs by Richard Carlyle Ball

XUM



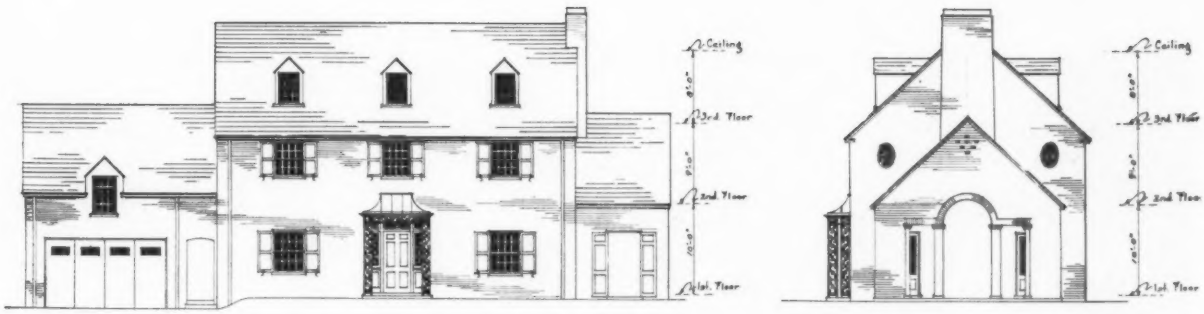
SECOND FLOOR PLAN



FIRST FLOOR PLAN

HOUSE IN COLONY HILL, WASHINGTON, D. C., HORACE W. PEASLEE, ARCHITECT, GERTRUDE SAWYER, J. H. LAPISH, ASSOCIATES

XUM

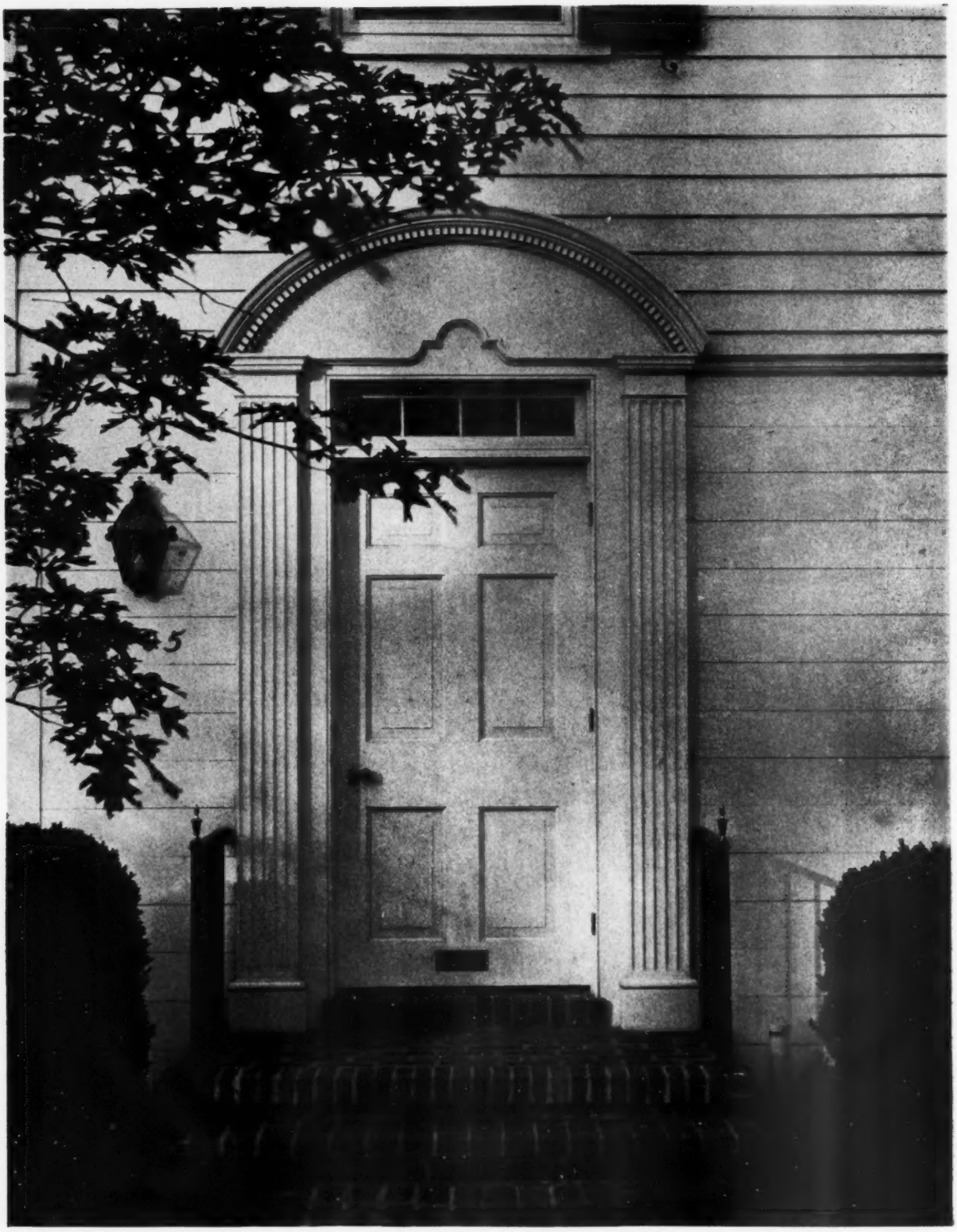


Construction Data: Wood frame construction. Exterior Walls, brick, white-washed; exterior woodwork painted white; blinds painted green; roof, gray slate. Third floor contains two rooms and bath. 43,500 cubic feet

(Plans on facing page)

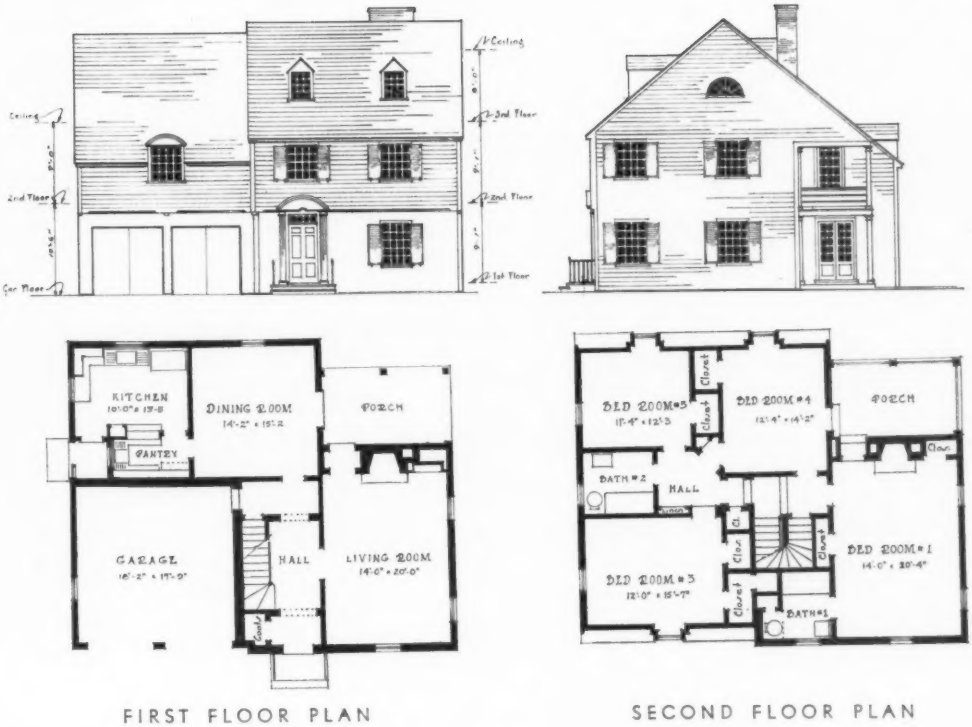
HOUSE IN COLONY HILL, WASHINGTON, D. C., HORACE W. PEASLEE, ARCHITECT, GERTRUDE SAWYER, J. H. LAPISH, ASSOCIATES

XUM



DETAIL OF MAIN ENTRANCE
HOUSE SHOWN ON FACING PAGE

HOUSE IN COLONY HILL, WASHINGTON, D. C., HORACE W. PEASLEE, ARCHITECT, GERTRUDE SAWYER, J. H. LAPISH, ASSOCIATES

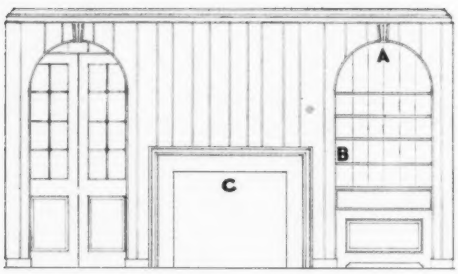


FIRST FLOOR PLAN

SECOND FLOOR PLAN

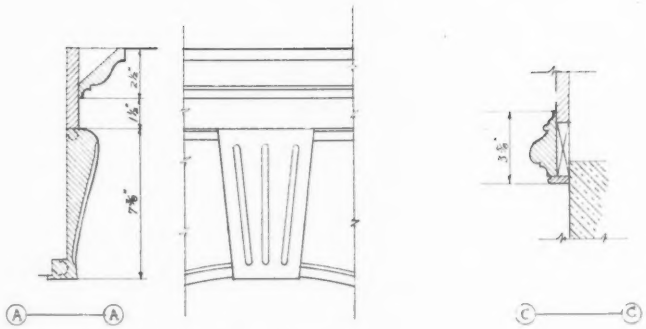
HOUSE IN COLONY HILL, WASHINGTON, D. C., HORACE W. PEASLEE, ARCHITECT, GERTRUDE SAWYER, J. H. LAPISH, ASSOCIATES

XUM

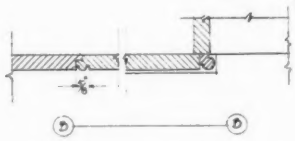


Living Room: Fireplace end panelled with vertical white pine boards; wainscot of horizontal boards; fireplace facing and hearth, brick. Walls above wainscot, colonial wall paper

Construction Data: Wood frame construction. Exterior walls covered with siding painted white; shutters, painted light green; roof, tapered asbestos shingles. Third floor contains two rooms and bath. 33,700 cubic feet

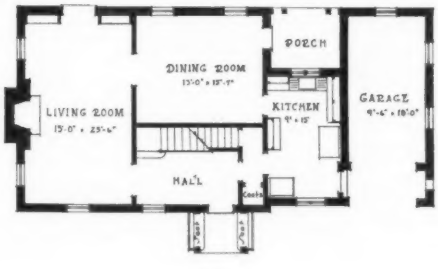


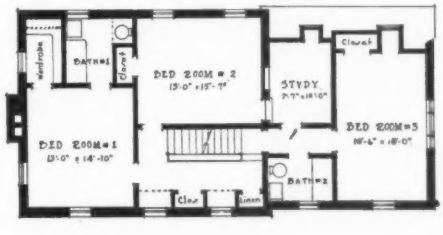
KEY BLOCK ELEVATION



DETAILS FIREPLACE END OF LIVING ROOM

HOUSE IN COLONY HILL, WASHINGTON, D. C., HORACE W. PEASLEE, ARCHITECT, GERTRUDE SAWYER, J. H. LAPISH, ASSOCIATES





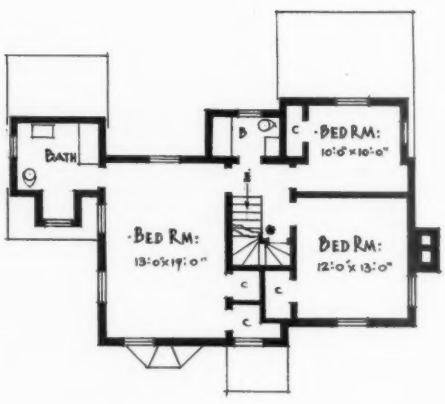
Exterior Walls, brick, light red color; wood trim painted ivory; first story blinds, painted ivory, second story blinds, dark green. Third floor contains one room and bath. 34,700 cubic feet

HOUSE IN COLONY HILL, WASHINGTON, D. C., HORACE W. PEASLEE, ARCHITECT, GERTRUDE SAWYER, J. H. LAPISH, ASSOCIATES

XUM

GLASGOW

FIRST FLOOR



SECOND FLOOR

Frame construction. Walls, hand-split wood shingles painted white. Roof, wood shingles. Shutters painted green. Interior wall finish, wall paper. Woodwork painted white. Floors, oak. Baths and kitchen, tile. 23,300 cubic feet. Cost, 40 cents a cubic foot. Built, 1931

HOUSE OF B. F. JONES, WEST ORANGE, NEW JERSEY

D. WENTWORTH WRIGHT, ARCHITECT

MAIN ENTRANCE ELEVATION

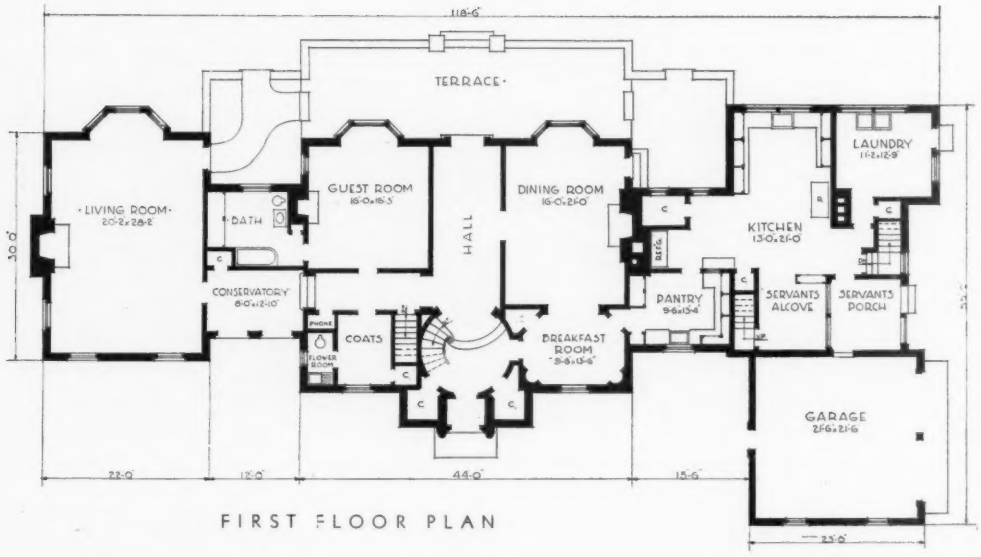
GARDEN ELEVATION

HOUSE OF JOSEPH HUSBAND, BEDFORD, NEW YORK

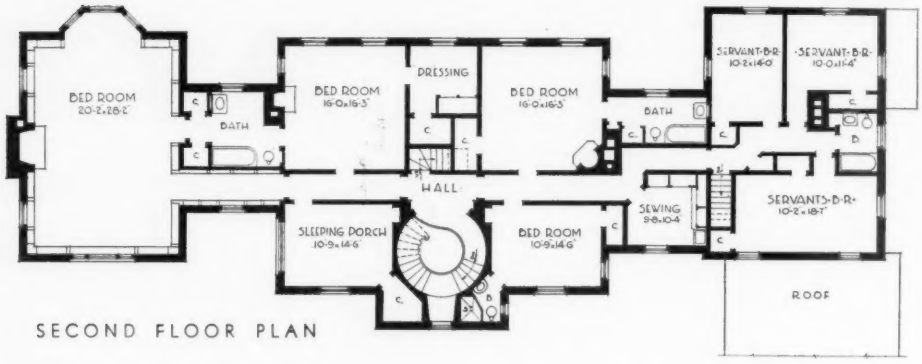
GODWIN, THOMPSON & PATTERSON, ARCHITECTS

Photographs by George Van Anda

XUM

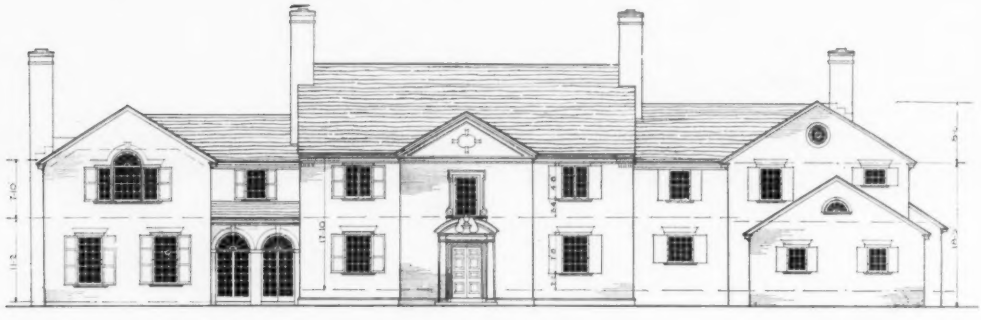


FIRST FLOOR PLAN



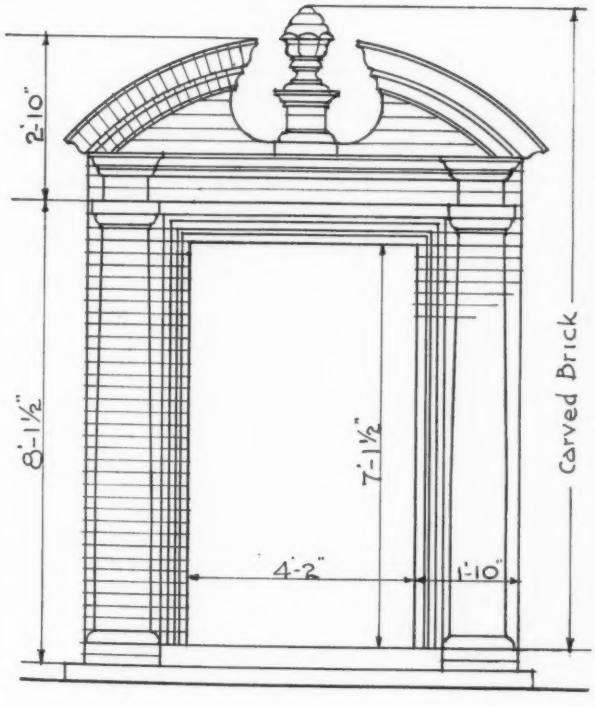
SECOND FLOOR PLAN

GARDEN ELEVATION



MAIN ENTRANCE ELEVATION

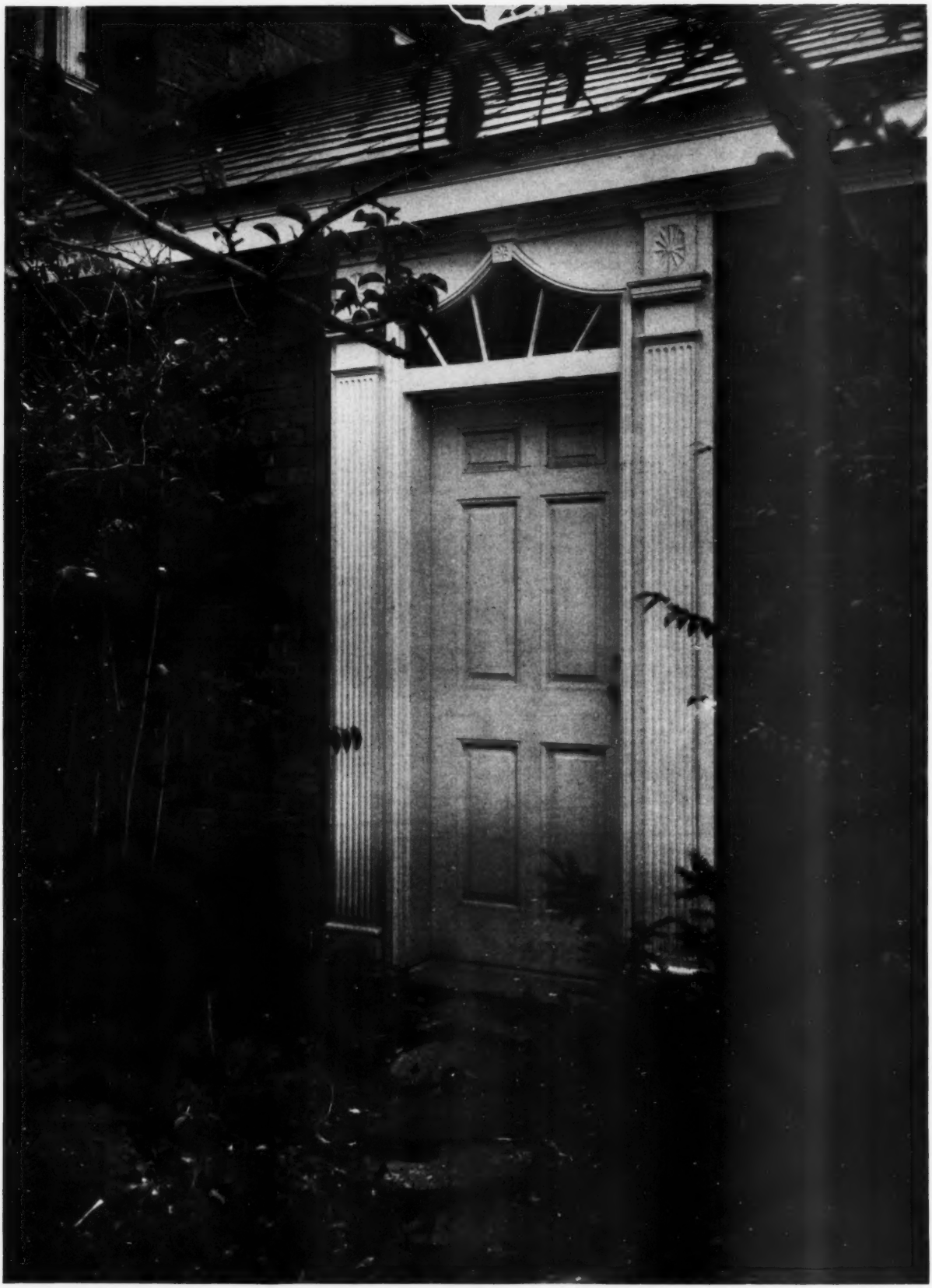
HOUSE OF JOSEPH HUSBAND, BEDFORD, NEW YORK. GODWIN, THOMPSON & PATTERSON, ARCHITECTS



MAIN ENTRANCE OF HAND CARVED BRICK

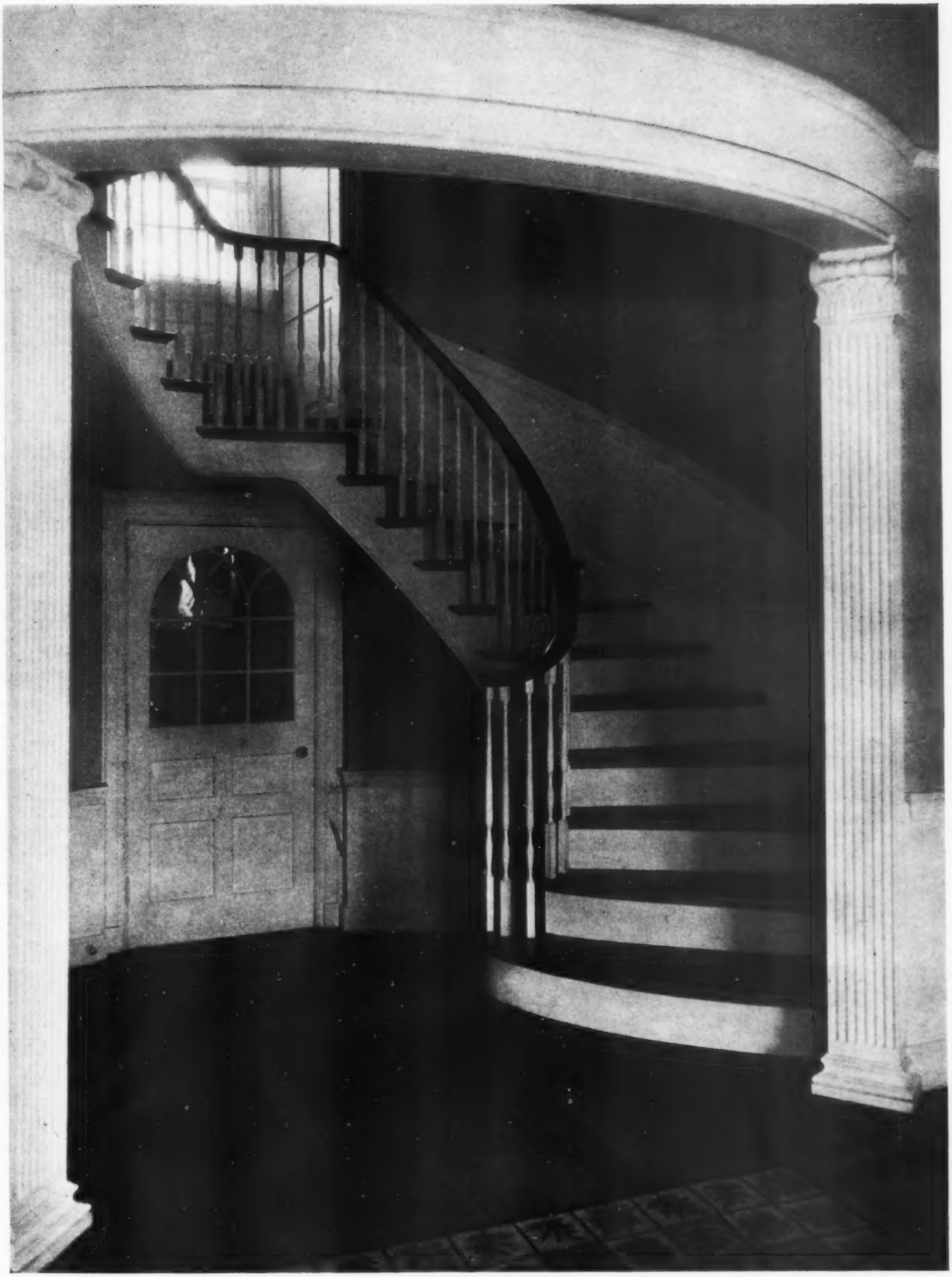
HOUSE OF JOSEPH HUSBAND, BEDFORD, NEW YORK. GODWIN, THOMPSON & PATTERSON, ARCHITECTS

XUM



FORECOURT ENTRANCE TO GARAGE

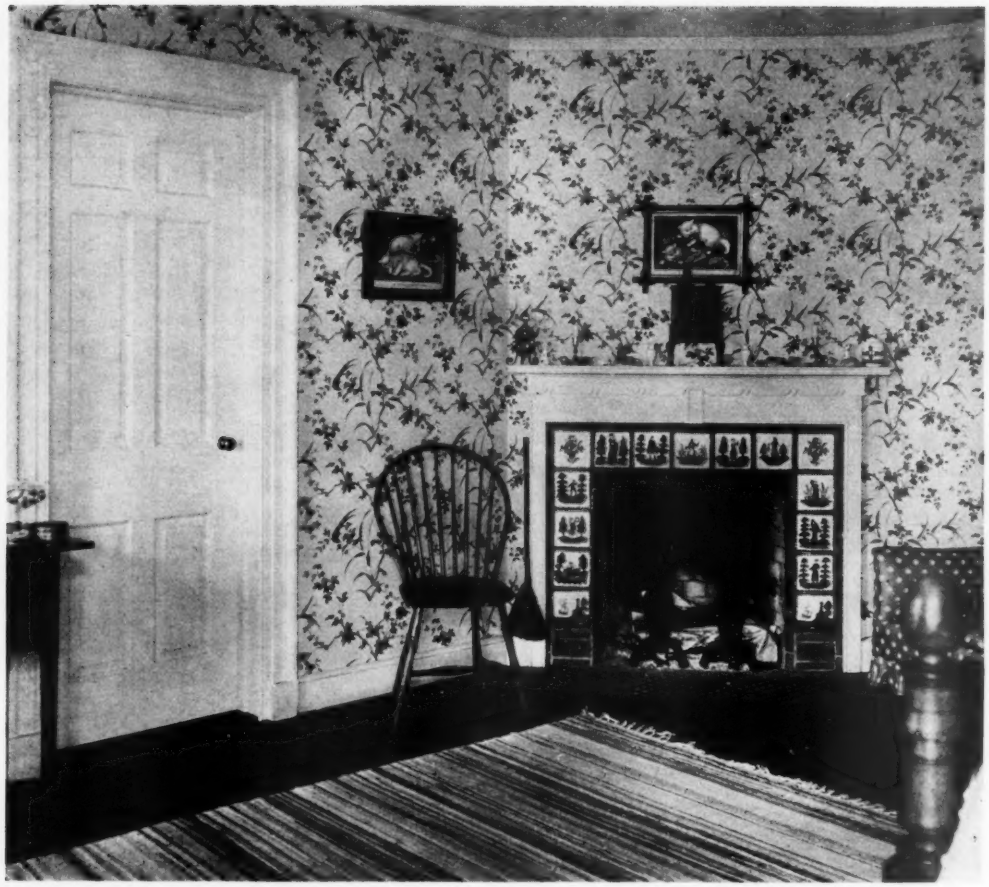
HOUSE OF JOSEPH HUSBAND, BEDFORD, NEW YORK. GODWIN, THOMPSON & PATTERSON, ARCHITECTS

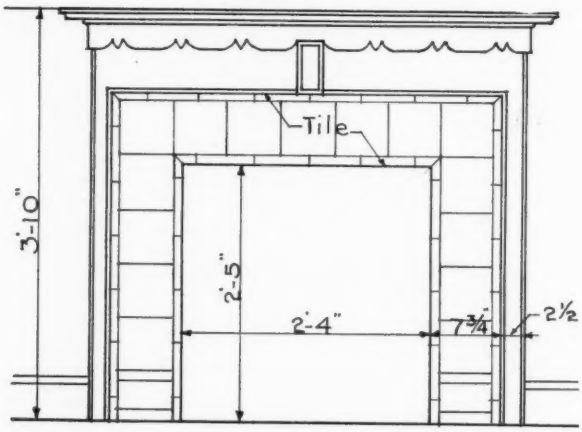


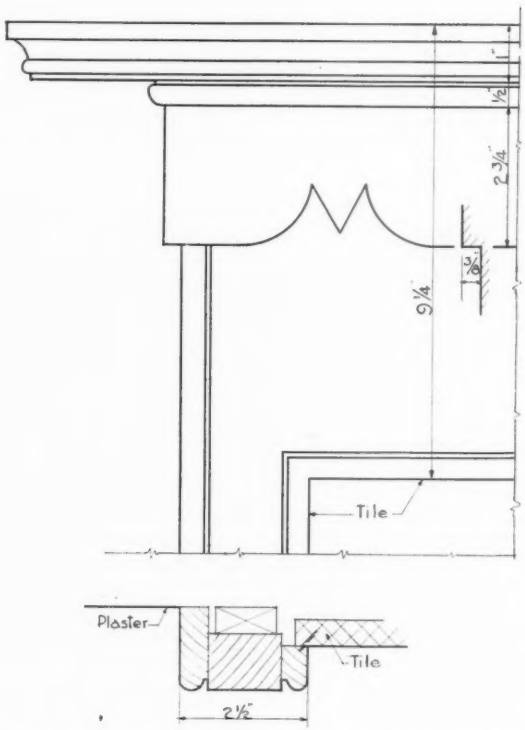
MAIN STAIRWAY

HOUSE OF JOSEPH HUSBAND, BEDFORD, NEW YORK. GODWIN, THOMPSON & PATTERSON, ARCHITECTS

XUM

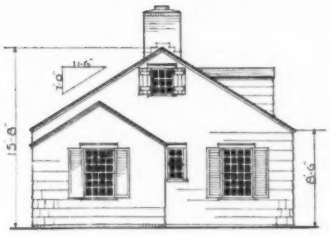




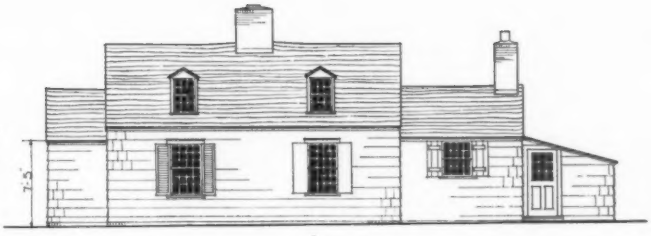


DETAIL OF
BEDROOM FIREPLACE

HOUSE OF JOSEPH HUSBAND, BEDFORD, NEW YORK GODWIN, THOMPSON & PATTERSON, ARCHITECTS



END ELEVATION



REAR ELEVATION

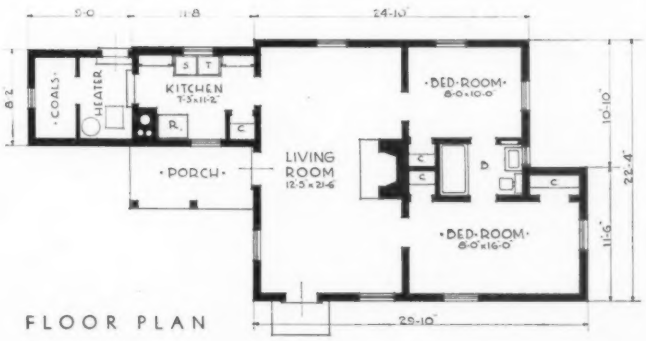
END ELEVATION

FRONT ELEVATION

GATE LODGE, ESTATE OF CARROLL L. WAINWRIGHT

EASTHAMPTON, LONG ISLAND

PENROSE V. STOUT, ARCHITECT



FLOOR PLAN

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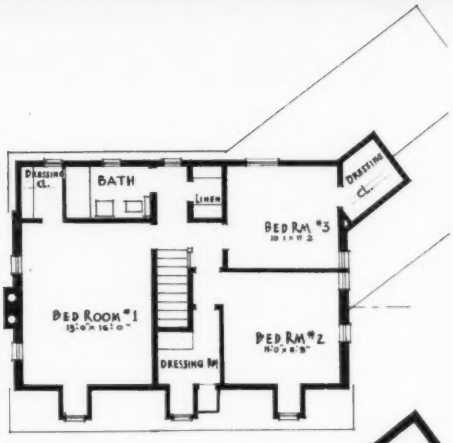
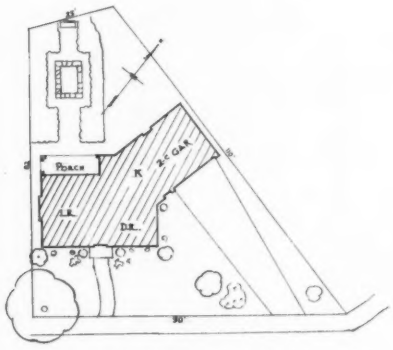


SECOND FLOOR

SOUTH ELEVATION

WEST ELEVATION

FIRST FLOOR



PLOT PLAN

Frame construction with veneer of reclaimed brick. Roof, wood shingles stained brown. Exterior woodwork stained brown. Interior trim, knotty white pine, stained. Floors in bathroom and kitchen, rubber tile. Bathroom and lavatory walls, enameled steel tile. Steel casements. 26,000 cubic feet. Cost, including landscaping, 38½ cents a cubic foot

HOUSE OF RICHARD R. GRANT, DAYTON, OHIO

RICHARD R. GRANT, ARCHITECT

American Architect Reference Data

NUMBER THREE—NOVEMBER, 1932

MECHANICAL REFRIGERATING EQUIPMENT

A Guide to the Selection of Equipment for Residential and Commercial Buildings

■ The purpose of these reference data is to assist architects in their approach to the problem of selecting mechanical refrigerating equipment. Here will be found (1) a brief summary of the principles of mechanical refrigeration and the types of system normally employed, (2) an outline of the major factors in the American Standard Safety Code for Mechanical Refrigeration which affect the architect's selection of equipment, and (3) a summary of the factors to be considered when making comparative studies of competing equipment suitable for a given project.

Following the text will be found advertising pages presenting factual reference data covering mechanical refrigerating equipment of various types. The advertising data have been related to the introductory analysis of the problem.

WITHIN the last decade the developments in the field of mechanical refrigeration have brought many of its applications within the scope of the architect's everyday practice. Of the three basic applications of mechanical refrigeration—(a) for the preservation of perishables, (b) for comfort work, and (c) for industrial processing, the first two enter in some measure into the design of most modern buildings. The preservation of food products is the most familiar application and touches the architectural field in all residential buildings and wherever food is sold, distributed or served. The preservation of wearing apparel, including furs, enters into many commercial structures, including fur storage vaults in banks and stores.

But of utmost importance is the growing use of mechanical refrigeration for air conditioning, air cooling, and cooling of drinking water. Familiarity with the entire field of mechanical refrigeration thus becomes incumbent upon the well-informed practicing architect.

PRINCIPLES OF MECHANICAL REFRIGERATION

THE evaporation of a volatile liquid, or the expansion of a compressed gas requires its absorption of heat. This fact underlies the operation of all mechanical refrigerating equipment. In its simplest terms a mechanical refrigerating unit consists of a supply of a suitable refrigerant and a means for evaporating or expanding it where the heat absorbed may be drawn from the products to be cooled. But since it is not desirable to permit a refrigerant to be wasted after evaporation or expansion, some means is required for recovering the refrigerant and returning it to its original form of a compressed gas or liquid so that the process may be repeated indefinitely.

The three basic elements of any mechanical refrigeration system are, therefore, (1)—THE EVAPORATING UNIT, either flooded or dry expansion type, embracing a suitable valve to control the liquid refrigerant and a chamber or coils in which the evaporation process may take place without coming into contact with the material to be cooled. (2)—THE CONDENSING UNIT which in the conventional type machine includes (a) a compressor taking gas from the evaporator and discharging it into (b) a condenser which converts the compressed gas into liquid form by transferring the heat of compression to surrounding air or water, whence the liquid refrigerant flows to (c) a receiver or collecting drum, and thence goes to (d) a pressure reducing device or valve which divides the high and low pressure sides of the system. The low side of the system is the evaporator. (3)—THE UTILITY UNIT which is the refrigerating cabinet, cold room, unit cooler, brine tank, or other device or space in which the cooling effect produced in the evaporator is utilized.

The foregoing elements are common to the compression method of refrigeration as distinguished from the absorption method. In the latter the function of the compressor is taken by an absorbing medium which assimilates the low pressure gas discharged from the evaporator, from which the refrigerant is subsequently released for re-use by the application of heat. The absorption system is employed in gas domestic refrigerators and certain large waste steam installations, while the compression method is commonly employed in electric domestic refrigerators and the majority of commercial and industrial units. Both systems may be further classified as of the direct expansion type in which the refrigerant is conveyed to the evaporator placed in the utility unit, as distinguished from the indirect or brine system in which evaporation takes place in a brine chamber, cooling the brine, which is then piped to the utility units.

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TYPES OF SYSTEM

THREE basic types of system are recognized in the Safety Code for Mechanical Refrigeration of the American Society of Refrigerating Engineers, and may be identified as follows:

1. UNIT SYSTEM, in which the three basic elements of evaporating unit, condensing unit and utility unit are all embraced in a single self-contained device which can be removed from buildings without breaking any pipe connections within the refrigeration system. This embraces the familiar domestic refrigerator, portable electric water coolers, self-contained ice cream cabinets, milk coolers, etc.

On account of the small amount of refrigerant used in these self-contained units they may be located in some places where larger machines piped in place are prohibited.

2. MULTIPLE OR APARTMENT DWELLING SYSTEM, in which a multiple number of expansion units contained in separate utility units are served by a single condensing unit from which the refrigerant is distributed on the high pressure side to the several evaporators. These systems are subject to more rigid limitations than are unit systems, and additional precautions, such as safety devices, the use of conduit to protect the refrigerant lines, and the use of a warning agent, are specified in the Code. These requirements become more rigid as the systems increase in size.

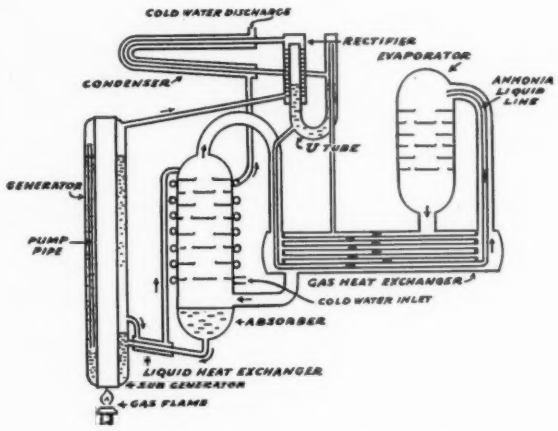
3. CENTRAL SYSTEMS OR INDUSTRIAL AND COMMERCIAL SYSTEMS. These are the installations in commercial and industrial buildings as distinguished from dwellings. The larger installations are required to employ safety devices not considered necessary on smaller systems. They may include multiple as well as single evaporator systems, and they may operate by the direct expansion method or by the brine method.

FACTORS INFLUENCING SELECTION OF MECHANICAL REFRIGERATING EQUIPMENT

THE selection and installation of mechanical refrigerating equipment should be in compliance with the current edition of the Safety Code for Mechanical Refrigeration of the American Society of Refrigeration Engineers. This Code has been adopted by the industry, which is also seeking its general adoption by municipalities and other governing bodies. In the following paragraphs the major requirements of the current edition of the A. S. R. E. Code are summarized, but it should be understood that details are not touched upon and that local governing ordinances (which may be at variance with the Code) may materially influence the selection of equipment. The A. S. R. E. Code is substantially in accord with the Code approved by the American Standards Association.

QUANTITY AND CHARACTER OF REFRIGERANT EMPLOYED

THE current edition of the A. S. R. E. Safety Code classifies refrigerating systems "according to the total weight of the refrigerant contained in or required for their proper operation" as given in the following table:



Typical elements of gas-fired domestic type refrigerating unit employing aqua ammonia and hydrogen (Platten-Munters System)

At right—Typical elements and operating cycle of domestic (unit) refrigerating machine using reciprocating compressor with expansion valve

A. S. R. E. SAFETY CODE CLASSIFICATION OF REFRIGERATING SYSTEMS

Class	Limiting Quantity of Refrigerant Employed— in Pounds
A	1000 lbs. or more
B	Over 100, under 1000 lbs.
C	Over 20, not over 100 lbs.
D	Over 6, not over 20 lbs.
E	6 lbs. or less.

The Code further imposes certain limitations where "flammable" and "irritant" refrigerants are employed in any class of system.

The prevailing classification of refrigerants for code purposes is indicated in the table on the opposite page.

For practical reasons no one refrigerant is universally adaptable. It should be recognized that reliable opinion does not find any known refrigerant in common use or any that might be used under pressures as entirely without hazard. The architect should be governed in the selection of refrigerants by the performance characteristics of the refrigerant in relation to the nature of the project at hand as determined by practical experience and engineering judgment.

LIMITATIONS ON USE

UNIT REFRIGERATORS are limited in size by the A.S.R.E. Code to Classes "D" and "E," and as to use substantially as follows: No unit system containing irritant, flammable or harmful refrigerants shall be placed in wards or private rooms of hospitals, sleeping quarters of asylums, cell blocks of prisons, or any place where people are confined or helpless. Class "E" units and Class "D" units of sealed type tested to two times normal test pressures, can be located anywhere except as above. Only Class "E" systems can be placed in locations of public assembly (defined in detail in Code) and in diet

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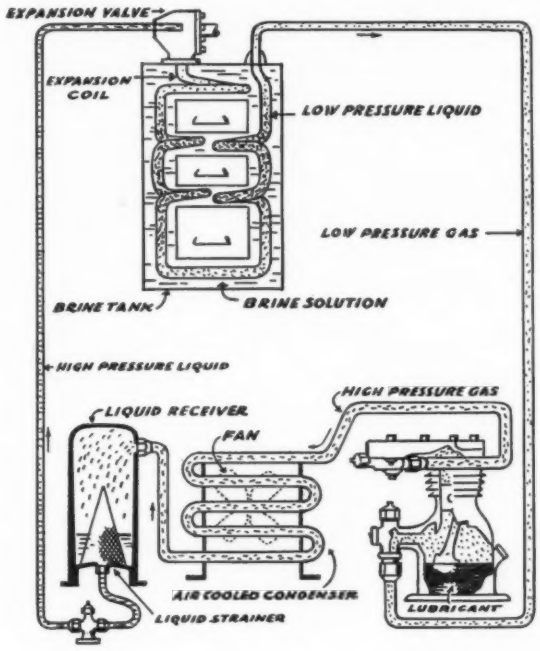

CLASSIFICATION OF REFRIGERANTS ACCORDING TO A. S. R. E. CODE

Refrigerant	*Symbol*	*High Side Test Pressure*	*Character*
Carbon Dioxide.....	CO_2	1500	
Ethane	C_2H_6	1100	Flammable
Ammonia	NH_3	300	Irritant*
Propane	C_3H_8	250	Flammable
Dichlorodifluoromethane	CCl_2F_2	230	**
Methyl Chloride	CH_3Cl	175	Flammable
Sulphur Dioxide.....	SO_2	135	Irritant
Isobutane	C_4H_{10}	135	Flammable
Butane	C_4H_{10}	100	Flammable
Ethyl Chloride	C_2H_5Cl	100	Flammable
Methyl Formate	$C_2H_4O_2$	30	Flammable
Dichloromethane	CH_2Cl_2	15	
Dichloroethylene	$C_2H_2Cl_2$	15	
Trichloroethylene	C_2HCl_3	15	

*Ammonia is not classed as flammable, though it may burn within a narrow range of air mixtures.

**Dichlorodifluoromethane (also known by the trade name Freon and symbols F12 and K12) is non-flammable and in its normal state is non-irritant, but owing to the fact that it becomes irritant in the presence of a flame, it has been classified by a definition now pending (Oct., 1932) in A.S.A. as irritant only in case of the presence of an open flame or flame producing apparatus.

kitchens of hospitals. In the latter case these kitchens shall have tight-fitting, self-closing doors and ventilation to the outside air by means of easily opened windows.

MULTIPLE OR APARTMENT DWELLING SYSTEMS. These installations are strictly governed in every detail by the A. S. R. E. Code, requiring among other things the protection of all distribution and return lines in a ventilated or sealed conduit, and requiring test pressures and safety appliances that increase as the quantity of refrigerant in the system rises about a 20 lb. limit.

CENTRAL, INDUSTRIAL AND COMMERCIAL SYSTEMS are limited according to their class, as to the location of the equipment in machinery rooms, which in turn may be limited as to the location within the building. The indirect method of refrigeration must be employed in theatres and similar places of public assembly, in hospitals, schools, etc. See Code for details.

LOAD

THE selection of a refrigerant according to load or capacity involves a number of highly technical considerations which are normally beyond the scope of the architect's problem. As between the use of the unit, multiple or central types of systems, the load may become a governing factor. When, for example, one utility unit, such as an ice cream cabinet, requires sub-freezing temperatures, while the others require temperatures for food preservation at 32° to 45° F., it may be more economical to install a separate unit for the sub-freezing temperatures than to use a portion of a central system, because the latter must be designed to serve the lowest temperatures required by the installation.

Similarly, load is related to cost. A number of isolated small units may be most economically installed by the purchase of independent units. A larger number of utility units, as in apartment house installations, may be served more cheaply by a multiple system than by either the central brine or unit system. However, in centers where the Code requirements for the installation of multiple systems are enforced, their cost may be relatively close to the cost of installing separate units.

NATURE OF PROJECT

AS already indicated, the A. S. R. E. Code limits the installation of mechanical refrigerating equipment in places where people are confined or helpless, and in certain other locations according to the character of the refrigerant employed and the size of the system. Further limitations govern the use of refrigerant in air conditioning systems to prevent toxic or irritant refrigerants entering the spray water or the air ducts.

Practical experience governs the adaptability of equipment to specific projects, particularly in the preservation of foods and clothing. Here enter the factors of required temperatures, humidity and air movement. In certain types of food storage, air movement is essential, suggesting the logical use of unit coolers with air circulating fans. In other cases air movement, without proper control of humidity, is detrimental to preservation.

It must be acknowledged that today practical experience with refrigeration equipment has progressed more rapidly than theory. In consequence of this situation theoretical computations and data are of less value in guiding the architect's choice than the experience of a competent refrigerating engineer or technician. The selection of equipment for larger installations, involving choice of refrigerant, capacity of machine, and type of cooler, is thus beyond the realm of the average architectural office and need not be further discussed here.

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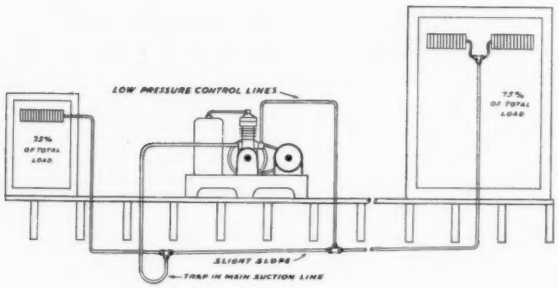
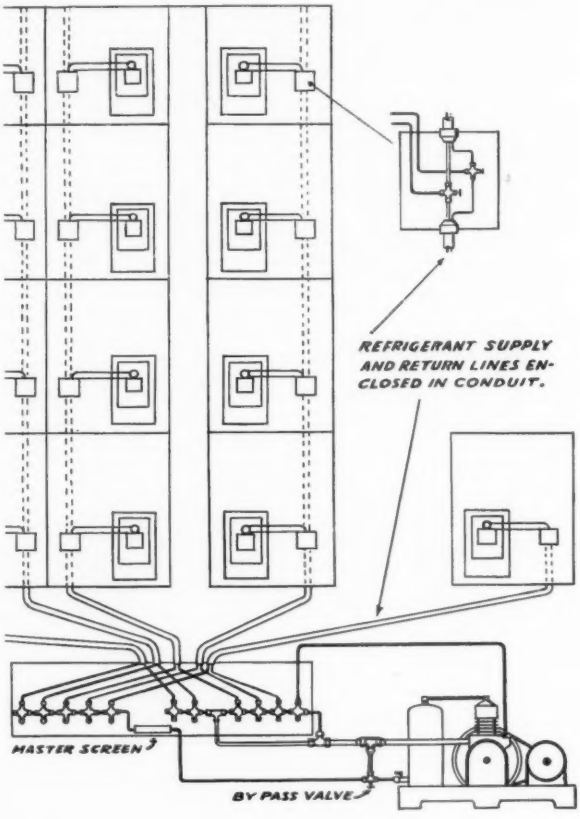


Small commercial installation of direct expansion type



Typical layout of a multiple system in an apartment house

CHARACTER OF INDIVIDUAL UNITS

NEVERTHELESS, it often becomes the architect's problem to approve or reject apparatus offered by competing manufacturers, or to make comparative studies of the merits of units offered as suitable for the project in hand. The following data may be employed as a guide in this comparative study of standard equipment.

MATERIALS USED. Metals, oils, packing, etc., in contact with the refrigerant must be such as to resist corrosion or attack by the refrigerant. See Refrigerating Data Book, Chapter I.

COMPRESSORS. Compare operating speed, number of cylinders and moving parts, character of bearings, sturdiness and durability of parts, precision of assembly, and method of sealing in refrigerant.

CONDENSERS. Compare size in relation to capacity, conductivity and durability of material used, cooling medium employed (air or water), method of disassembly for repairs or to remove sludge or obstructions in water-cooled condensers.

EVAPORATORS. Study construction for resistance to pressures and continuous freedom from leakage, character of heat absorbing surfaces, etc. With unit coolers, compare fans, motors, motor speeds, character of construction. In comparing unit coolers against pipe coil evaporators, note initial cost, space economy, adaptability to space cooled.

PROTECTIVE AND CONTROL DEVICES. Determine compliance with Code requirements for relief valves, rupture members, fuseable plugs or other safety devices. Also compare operating controls, including expansion valves.

INSULATING MATERIALS

ADEQUATE insulation of utility units (that is, the space cooled by the evaporator) and of distribution lines carrying brine or other cold fluids, is a problem independent of the refrigerating machinery, except in the case of unit systems and of multiple systems where standard refrigerating cabinets are purchased. For data on the design of cold rooms or large refrigerators, see Refrigerating Data Book, Section IV, Insulation and Condensers—particularly Chapters 12, 13 and 21.

Any consideration of insulating materials for refrigerating purposes always involves their moisture-resisting qualities. All materials employed for such purposes are permeable to water vapor, and if the insulation is colder than the outside air and is not protected on the outside, most of the water which diffuses into the insulation from the outside will condense, accumulate and possibly freeze, eventually producing a more or less saturated state and lowering the insulating value many times. Such action may also deteriorate or break down the insulating materials, the sealing or cementing products and structural elements used in conjunction therewith. It is essential that the warm side of insulated surfaces be protected by means of air-tight coatings.

The design of refrigerated space in buildings involves a number of important considerations in addition to the selection of the appropriate insulating material. Rigidity of construction and the methods of attaching the insulating material to the structural parts of the enclosure are essential to the permanent retention of the designed rate of heat transfer, both factors contributing to the permanent maintenance of an air seal on the warm side of the refrigerated enclosure. Here again experi-

PURE CORK BOARD IN COLD STORAGE PRACTICE IN INSULATION

	Exposure	*Thickness in.*
Exterior cooler walls	North	4
	Northeast	4
	Northwest	4
	South	5
	Southeast	5
	Southwest	5
(For walls facing east or west use 5 in. on that wall exposed to prevailing summer winds and 4 in. on the other.)		
Exterior freezer walls	North	6
	Northeast	6
	Northwest	6
	South	7
	Southeast	7
	Southwest	7
(For walls facing east or west use 7 in. on that wall exposed to prevailing summer winds and 6 in. on the other.)		
Partition walls on floors between freezers and coolers		6
Cooler floors exposed to usual atmospheric temperatures		5
Freezer floors similarly exposed		7
Roof over cooler space		6
Roof over freezer space		8

ence rather than theory is the best guide to successful design. Reinforced concrete, for example, is preferred over other wall and floor constructions. Hollow tile should not be used in floors, walls and partitions of refrigerated spaces. The spaces in these tiles collect moisture and ice. Moisture damages the insulation applied to the hollow tile surfaces and the ice damages the tile. Similar practical considerations influence the installation of insulating materials.

"The only precaution one can exercise is to demand painstaking work by those who apply the insulating materials, and to carefully inspect the work during construction. All waterproof materials used to apply insulating are not air or vaporproof in the thicknesses used. Again, walls and floors crack and with them the waterproof covering." (Refrigerating Data Book, Chapter 21).

An indication of the general practice followed in commercial refrigeration work is shown in the accompanying table which gives the thicknesses of pure cork board recommended in cold storage work.

DESIGN AND SPECIFICATION FACTORS

REGARDLESS of the type of system employed, it is of utmost importance that the architect make adequate space provision for the refrigerating equipment required for the building. In the case of unit or domestic refrigerators, see following section. In the case of multiple and central systems and small self-contained refrigerating machines employed for isolated air conditioning or cooling cabinets, there should be not only sufficient space for proper installation of the compressors and condensers, but also space to provide access for repairs. Note that for larger systems the Code establishes definite requirements for machinery rooms, use of noncombustible materials, etc.

Layout of distribution lines should be planned so that no refrigerating lines are run through an elevator or dumbwaiter shaft or any shafts having outlets into living quarters or main exit hallways.

The installation of refrigerating equipment has become a separate trade and for maximum economy and satisfaction should be let as a separate contract rather than as an adjunct to plumbing or heating contracts. Secondary work, including preparation of foundations, cutting, patching, etc., should be allocated to the proper trades outside of the refrigerating contract.

SELECTION OF DOMESTIC OR UNIT REFRIGERATORS

INASMUCH as the architect or purchaser has no choice with regard to the details of construction or assembly of unit refrigerators other than the choice between the complete entities, different considerations are involved in their selection than obtain in the case of multiple or central systems. It may be appreciated that manufacturers producing unit systems have carefully sought to balance all elements of their equipment to operate effectively in unison. The comparison between such units, therefore, is reduced to a determination of relative quality of construction, efficiency of performance and both initial and operating costs. The following points may serve as a guide in a comparative study of domestic or similar unit refrigerators.

BASIC TYPES OF UNITS

AS between gas and electric refrigerators, the choice may be largely governed by the relative cost of the gas or electricity consumed, and the cost of water connections and water consumed for cooling gas units. The devices themselves are so designed as to provide equally satisfactory operation. Other factors are quietness, freedom from moving parts (in the case of gas refrigerators), portability, etc.

As between "sealed units" and those not so classified (conventional or open-type machines), the choice may be influenced under certain conditions by the following provisions of the A. S. R. E. Safety Code. The Code defines a "sealed unit" as "a pressure-imposing element which operates without a stuffing box and/or which does not depend upon contact between moving and stationary surfaces for refrigerant retention." It further provides that "Unit systems containing not over 3½ lbs. of refrigerant and *sealed units* containing not over six lbs. of refrigerant tested to two times the pressure specified herein can be located anywhere except as provided in Par. 402-a." Thus a sealed unit may be of larger size than an open type unit under given conditions of use.

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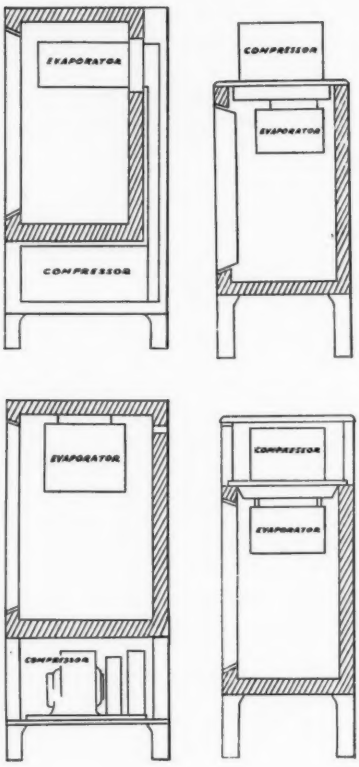


Arrangements of compressors and evaporators in domestic refrigerators

SPACE REQUIREMENTS AND CAPACITY

DOMESTIC refrigerators should be chosen on the basis of two cubic feet per person normally in the family or household. This has become the minimum standard recommended by the industry. Capacity is measured according to standard methods. For larger units, such as are required for boarding houses, restaurants, lunch counters, delicatessen, dairy and cheese stores, etc., capacity should be in excess of the maximum cubic volume of perishables kept on hand at any time.

DIMENSIONS AND LOCATIONS OF UNITS

ARCHITECTS should guard against the tendency to purchase domestic units of less capacity than two cubic feet per person and should provide space in the plans of the dwelling or apartment house for the installation of unit refrigerators at least up to the minimum standard of size. Floor plan dimensions are readily obtainable from manufacturers, but caution should be taken to provide adequate vertical space because of the tendency to elevate cabinets above the floor for easy access and because in some types the refrigerating machine is mounted on top of the cabinet.

Units may be obtained of various sizes and of extremely compact design to accommodate special conditions in the plan, such as frequently develop in the design of serving pantries, kitchenettes and apartment house kitchens. Space containing air-cooled units should be suitably ventilated, but no special provision is required beyond the normal ventilation of the room. Standard practice permits the installation of refrigerators in kitchens in preference to isolated locations less accessible during the preparation or restorage of foods.

ELEMENTS TO CONSIDER IN COMPARING UNIT REFRIGERATORS

MECHANICAL UNIT—Compare size and type of motor, type of fans for air circulation over condenser, use of belts, gears or direct drives, character of compressor, quality and precision of construction, mounting to achieve maximum quietness, method of sealing refrigerant. Also ice freezing capacity, speed, etc.

CABINET INSULATION—Compare thickness and kind of insulation employed, placement of insulation with respect to heat source, protection of insulation against moisture penetration, insulation of doors, prevention of heat losses around doors, including gaskets and fitting of hardware. Note: Bureau of Standards Letter Circular *227* recommends the equivalent of two inches of insulation in domestic unit cabinets.

CABINET CONSTRUCTION AND FINISH—Compare materials employed and method of assembly, such as use of seamless or welded linings, all-metal or metal-and-wood framing; quality of finishes on exterior and interior, such as porcelain enamel, baked or air-dried enamels, or solid vitreous materials. Also interior arrangement of shelving, ice-making compartment, etc.; and exterior design and appearance.

ACCESSORY FITTINGS—Where pertinent to the problem, consider accessory fittings, such as methods for manual control of temperature, provision of lights, use of special hardware.

REPAIR AND ADJUSTMENT SERVICES—Compare service facilities offered by manufacturer or selling agent. Guarantees of free servicing should be judiciously examined as to their precise terms to eliminate meaningless guarantees or guarantees that necessarily increase cost without commensurate value.

ECONOMIC FACTORS

VARIATIONS in initial price for units of equal capacity should be balanced against probable operating cost, service and repair charges, and rate of depreciation. Cost of electricity consumed in electrical refrigerators should be balanced against gas and water consumed by gas refrigerators, including relative installation costs. It may be noted that in some sections of the country, local ordinances require that electric refrigerators be served by a separate power circuit.

THE foregoing analysis has been prepared in consultation with qualified officers of the American Society of Refrigerating Engineers, the Electrical Refrigeration Bureau of the National Electric Light Association, and the Electrical Refrigeration Section of the National Electrical Manufacturers Association. All illustrations are redrawn from the Refrigerating Data Book and Catalog, first edition 1932-33, published by The American Society of Refrigerating Engineers.

NORGE

Rollator refrigeration

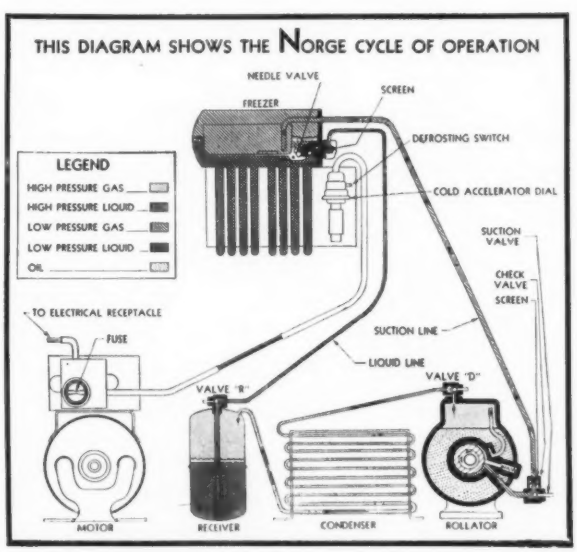
A scientifically proportioned refrigerator, affording maximum food storage space while occupying a minimum of valuable floor space, Norge is of superior quality throughout and is powered with an unusually efficient mechanism, the exclusive Norge Rollator.

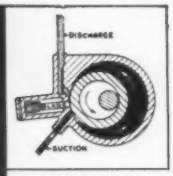
THE ROLLATOR—A development of the rotary principle compressor but simplified, having only three moving parts (*a*) shaft with integral cam, all one drop forged piece, (*b*) roller and (*c*) blade, the Norge Rollator has better than 90% volumetric efficiency. All parts are submerged in a permanent bath of protective oil, under pressure.

THE COLD ACCELERATOR—Located inside the food compartment, on the freezer shield, at a convenient point for high visibility and easy operation, the Norge Cold Accelerator has nine points of chilling speed.

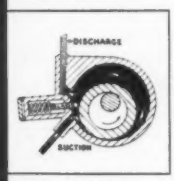
THE DEFROSTING SWITCH—Mounted on the instrument panel with the cold accelerator is the Norge Defrosting Switch. Defrosting is positive and requires no putting of hot water into ice trays or other containers to speed defrosting. Overnight, with the switch in the "Off" position, is sufficient time for defrosting and it is recommended that the freezer be defrosted, ordinarily, at intervals of every two weeks or more.

SERVICE FREEDOM—The staunch sturdiness of the Rollator and the mechanical precision with which it is built practically precludes any need for service attention other than what may arise from interruption of the household electric current supply. In the event of any failure of the mechanism to function perfectly, the entire mechanical and freezing assembly is removable and replaceable with a substitute unit in twenty minutes, by the average dealer's service man.

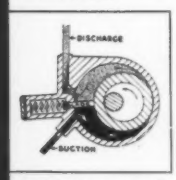




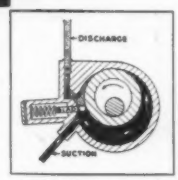
1. *Cylinder full of gas at start of compression.*



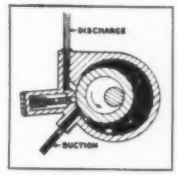
2. *Compression started, beginning suction stroke.*



3. *Discharge and suction strokes half completed.*



4. *Discharge and suction valves open simultaneously on compression.*



5. *Discharge and suction strokes completed.*

NORGE APPROVED INSULATION—Norge Approved Insulation is officially recognized as the most efficient of any type of insulation. Norge Approved Insulation is made of the fibres of the Cebia tree, and is exclusively processed so it has the proper density; from one to two pounds per cubic foot to give maximum insulating value. The insulation is batted in odorless asphalt-coated paper and the batts are sealed to the refrigerator frame, making a waterproof, tight insulation.

FOOD CHAMBERS—Every corner of the one-piece, acid-resisting, vitreous porcelain lining of the Norge food compartment is rounded for easy cleaning. There are no openings for tubes or mechanical parts through this lining. Smooth black Bakelite buttons, that do not catch on cleaning cloths, support the flat-bar food shelves.

ACCESSORIES—As standard equipment in certain models, Norge has four practical accessories in the Voir family, the Watervoir, Icevoir, Preservoir and Hydrovoir. The Watervoir, a crystal glass container, keeps a gallon of chilled water on tap. The Icevoir makes quickly frozen bar ice that need not be touched by tap water or hands in serving. The Preservoir is for extra cold storage. The Hydrovoir preserves and restores the garden freshness of vegetables. These accessories can be had at slight extra cost where not standard equipment.

Model	Net Capacity (cu. ft.)	Ice Pounds	Sq. ft. Shelf Space	Floor Space: Width over top	Floor Space: Depth over door	Height
A	4.25	5.4	9.2	25 1/16"	22 7/16"	51 3/4"
B & BP	4.25	5.4	9.6	25 3/16"	22 5/8"	53 3/16"
D & DP	5.6	9.	12.3	28 13/16"	23 11/16"	61 3/4"
F	6.8	9.	14.3	32 7/8"	25 9/16"	62 15/16"
H	11.1	14.1	20.95	42 1/4"	25 9/16"	68 1/4"

Models A, B, D exteriors Enamel. Models BP, DP, F, H Porcelain

NORGE CORPORATION
664 E. Woodbridge Street . . . . . Detroit, Michigan

Norge Corporation is a division of Borg-Warner Corporation, one of the world's largest makers of precision parts, including automotive free wheeling.

XUM

• Westinghouse •

Dual-automatic Refrigerators

The Westinghouse Dual-automatic Refrigerator includes all those features of food protection, utility and economy of operation that are so necessary and desirable in electric refrigeration, and, in addition, provides the exclusive double advantages and double protection of Dual-automatic operation and control.

AUTOMATIC UNDER NORMAL, AND UNDER EXTREME CONDITIONS

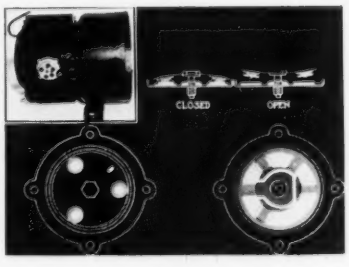
Every Westinghouse Refrigerator is Dual-automatic because it has: 1. Selective Temperature Control. A 7-point Temperature Selector assures automatic performance under *ordinary* conditions. 2. Built-in Watchman Control. The famous Spencer disc (Built-in Watchman) assures automatic performance under *extreme* conditions, because it not only stops the motor if unusual voltage conditions interrupt service, but also starts it again when the unusual conditions are past. This is exclusively a Westinghouse development, and is available in no other refrigerator.

HERMETICALLY SEALED UNIT, ABOVE THE FOOD COMPARTMENT

Westinghouse unit is hermetically sealed, thus providing completely trouble-free performance. It is placed above the food compartment, yet out of sight, permitting all the operating advantages of the unit at the top, yet affording the convenience of the Flat Buffet Top. Broom-high legs make sweeping and cleaning under the refrigerator simple and easy.

FORCED DRAFT COOLING, AND PERMANENT OIL SUPPLY

Forced draft cooling permits satisfactory operation of the Westinghouse unit under unfavorable conditions, especially where natural air circulation around the cabinet is limited. The oil supply is sealed into the mechanism, thus eliminating for all time any necessity for oiling the hermetically sealed unit.



The Built-in Watchman is a bi-metallic disc, placed on the side of the motor, which breaks or closes the circuit as it heats or cools. Excessive motor heat causes the disc to snap, thus breaking the circuit. When the heat subsides, the disc cools and snaps back into the closed position, thus restoring the current to the motor and allowing the unit to resume operation. The Selective Temperature Control makes the Westinghouse automatic under ordinary conditions—the Built-in Watchman adds automatic operation under extreme conditions.

ALL-STEEL CONSTRUCTION—PORCELAIN OR LACQUER FINISH

All Westinghouse cabinets, except the two largest sizes, are of all-steel construction, giving long life and stability not found in less permanent types of construction. Fine porcelain or lacquer exterior finishes are available in all sizes.

ONE-PIECE PORCELAIN INTERIOR, WITH PORCELAIN FROSTER

Interiors are of stainless porcelain, in one piece, without cracks or seams. The automatic electric froster is also of porcelain, thus making the whole interior exceptionally easy to keep clean and sanitary. Adequate ice-making facilities are provided, as well as double-depth tray for frozen desserts, and rubber ice-cube tray.

ROLLING SHELVES, ELECTRIC LIGHTS, CRISPING PAN, IN ALL-PORCELAIN MODELS

These added conveniences are available without extra charge in all porcelain models with the exception of the AP-45, or may be obtained for small additional amount in lacquer finished cabinets.

SIMPLE TO INSTALL—EASY TO MOVE

Westinghouse hermetically sealed unit makes installation simple and moving easy and inexpensive. No special piping or plumbing is necessary. Simply plug it into a convenience outlet.

4-YEAR SERVICE PLAN—BACKED BY WESTINGHOUSE

Utmost precision of manufacture, elaborate tests and inspection and the use of only the finest of materials give assurance of lifelong satisfaction and freedom from upkeep expense. Westinghouse provides a 4-year service plan, guaranteeing the user four full years of cost-free service from defects in the sealed-in refrigerating mechanism.

SIZES TO SUIT ALL REQUIREMENTS

The following table gives sizes and capacities—indicating that a Westinghouse is available to meet almost any requirement of home or institutional use. Larger sizes are covered in the commercial line, about which full information will be sent upon request.

Model	Cu. Ft. Storage	Sq. Ft. Shelves	Ice Cubes	Capacity Pounds	Floor Space	Height Inches
AL-45	4.2	8.4	54	5.25	24¼x20¾	55¼
AP-45	4.2	8.4	54	5.25	24¼x20¾	55¼
AL-60	6.1	11.4	96	11.	28⅞x22¼	59⅞
AP-60	6.1	11.4	96	11.	28⅞x22¼	59⅞
AL-73	7.2	12.8	96	11.	31⅞x22¼	59⅞
AP-73	7.2	12.8	96	11.	31⅞x22¼	59⅞
WL-90	9.0	15.7	96	11.	39⅛x22¾	59⅞
AP-90	9.0	15.7	96	11.	39⅛x22¾	59⅞
AP-130	13.5	24.8	192	21.	50¾x27 1/16	60
AP-200	20.1	37.7	192	21.	51 1/16x27 1/16	76

Ask your local dealer for delivered and installed prices.

WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY
MANSFIELD, OHIO

Architects Must Know Their Mouldings

(*Continued from page* 26)

of stock mouldings is to design freely without them and then select them as nearly as possible to interpret the design already produced. It is always a mistake to try to design with stock mouldings.

Reasons of economy nearly always require the architect to use stock mouldings on small buildings. This applies to both wood and metal and even, to a very limited extent, to stone and terra cotta. In larger work the cost of the knives is so small as not to be worth considering in wood but in metal the expense of dies is so great as to make the use of stock designs desirable even in larger work. Unfortunately, stock mouldings in metal, as well as in wood, usually occur without forethought out of the left-overs of special designs for special purposes. If all manufacturers in all types of materials could only be persuaded to make up their stock out of the essential curve elements in various sizes and leave it to the designer to combine them, much larger facilities in design would be possible with stock mouldings, giving a wide selection in sizes of such standard curves as the crown, ogee, round, half-round, quarter-round, cove, half catenary and half parabola.

JOINTS in mouldings, if they happen to fall between fillets or beads or in the shadow portion of the mouldings, do not disturb the general moulding effect. Special mouldings designed for a special purpose are frequently a combination of several curves put together to express a definite purpose on the part of the designer for a use which is not likely to occur again in the same way. It is for this reason that this type of moulding is never satisfactory for stock. Stock mouldings should be designed primarily for stock mouldings, separated into the simplest sort of elements with edges so designed as to make ready joints with their contacts and yet appear satisfactory when exposed.

The accompanying illustrations (see figure 7) show enough to indicate the essential scope of a moulding palette. Of course, there must be sizes of each to correspond with all needs. This discussion is in no sense intended to advocate the production of design by mathematical formula. The writer is unalterably opposed to such procedure. Design should be free and untrammeled, allowing the fancy to play without restriction other than as to purpose. No design can be considered as worth while that does not have purpose, but after the design is made where economy is an important consideration, as is the case in such a large majority of projects, a good design may be well interpreted in stock material if the designer makes the selections himself. It is certainly dangerous to allow a contractor to select stock mouldings to fill out the design made by an architect. All selections of stock mouldings for a specific interpretation should be made with skill and exactly specified. This means, of course, that every designer should have available in his office exact, full-sized contours of all stock mouldings that are in constant use and are available in various materials.

The discussion can not be appropriately closed without emphasizing the fact that beauty in form is dependent on scale and proportion of mass. No stock or even specially designed moulding can talk without a rasping clang unless it is in appropriate scale and unless its position with relation to other parts has been well considered.

No essay on mouldings can omit a warning concerning the effect of color on the interpretation of moulding language. As color and style of dress has to be selected with care in order to best interpret personal physiognomy, so color is of vital importance to the interpretation of style in mouldings. To attempt Gothic detail in white is to attempt the impossible. White, however, serves well as a medium for classic expression. This style needs a light background in order to effect the delicate play of shadow on which the classic is so dependent. The rendering of mouldings in color or the emphasis of shadow effects by shading corresponds to the painted make-up of an actor. It is hard and fixed in character and does not respond to the constantly varying light effect incident to shifting clouds and varying angles of reflection. Angles of the source of light vary in atmospheric content; both tend to give that subtle influence of variety so important to continued interest. In zones of tropical or semi-tropical glare, where the atmospheric content is not materially varied over long periods of time, color and shadow rendering have their important function in the same way that it is necessary for actors to make up before the footlights. The Gothic style was evolved with dark materials. Its configurations are made to talk with such materials and are spoiled with materials best suited to the classic. This style was evolved in zones of frequently cloud-screened light.

Direction of illumination is an extremely important factor in considering the design of mouldings. If the illumination is from below, the effect of moulding expression is diametrically opposite to the effect when the illumination is from above. Shadow effect is dependent on both contour and location of the source of illumination. The sun is a moving source of illumination, hence the continued interest in good architecture. If all architecture were constantly illuminated as of 45 degrees over the left shoulder, which is the theoretical method taught for rendering purposes, even the best architecture would be dull and commonplace.

Architectural League Exhibition

ARCHITECTS planning to submit photographs for the Forty-eighth annual Exhibition of the Architectural League of New York, to be held February 18 to March 11, 1933 are advised in a circular of information recently issued that the last day for the advance submission of photographs of exhibits is Thursday, December 1. A copy of this circular, which contains complete information for prospective exhibitors, may be obtained by addressing the League at 215 West 57th Street, New York.

THE Tenth National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York, December 5th to 10th. Modernization of building and plant equipment and many new products developed by research will be featured.

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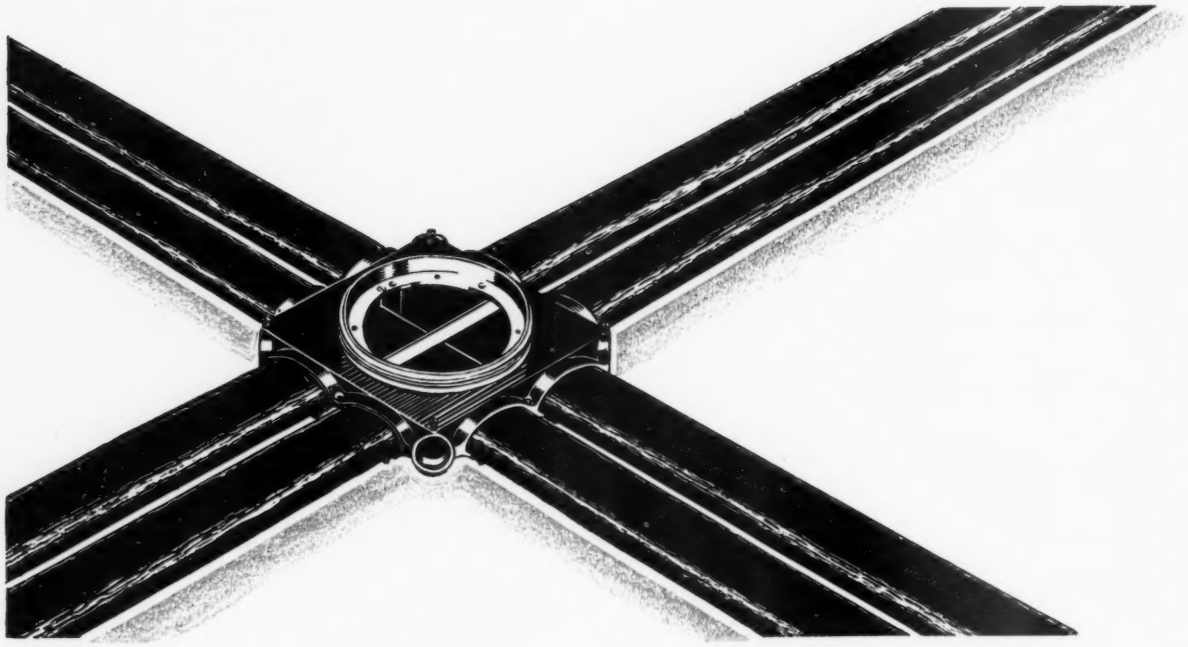
BUILD IN A LIFETIME OF WIRING FLEXIBILITY



The installation of a G-E Fiberduct system in modern buildings enables architects to overcome one of the prime factors which has contributed to the premature obsolescence of countless buildings of various commercial classifications. Economical—the inherent flexibility of this underfloor duct wireway permits the installation of electrical outlets, wherever needed, at any time during the life of the building. The owner is assured of continued tenant acceptance and can satisfy existing individual demands as well as any changes in office arrangements which future requirements may necessitate. Specify G-E Fiberduct for all types of public, commercial and industrial buildings. Safe and efficient, its installation assures every building of a lifetime of wiring flexibility. For further information see the nearest G-E Merchandise Distributor or write Section CF-10011, Merchandise Department, General Electric Company, Bridgeport, Conn.

WRITE FOR THIS MANUAL

A descriptive manual with full details and illustrations of the G-E Fiberduct System will be mailed immediately upon request. Write to Section F-10011, Merchandise Department, General Electric Company, Bridgeport, Conn.

Tune in on the "G-E Circle" every week day at 5:45 P. M., E. S. T. (except Saturday) N. B. C. Network of 54 stations.

GENERAL ELECTRIC

FIBERDUCT

MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

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STATE COLLEGE OF AGRICULTURE LIBRARY NOV 10 1932 MANHATTAN KANSAS

NEW CATALOGS . . .

Readers of AMERICAN ARCHITECT may secure without cost any or all of the manufacturers' catalogs described on this and the following page by mailing the prepaid post card printed below after writing the numbers of the catalogs wanted. Distribution of catalogs to draftsmen and students is optional with the manufacturers

NEW SENSITIVE HUMIDITY CONTROL

135 . . . The Lewis Humitrol, a sensitive hygrostat for the automatic control of humidity, is described in this folder. The new ribbon element, replacing hitherto unreliable moisture sensitive members in such devices, is described. Gives details of construction, wiring diagrams for various installation conditions, etc. Issued by Lewis Air Conditioners, Incorporated.

ARCO RADIATOR ENCLOSURES

136 . . . Built-in, free-standing and wall hung radiator enclosures for every type of radiation are described in this catalog of the American Radiator Corporation. Units for Arco, Fantom and the new Murray (concealed non-ferrous) radiators are featured. Installation and constuction details, proper recess dimensions and descriptions of each unit are given. Dated; A. I. A. File 30c41.

HERMOSA, THE TILE BEAUTIFUL

137 . . . Describing a tile that is guaranteed against crazing, this folder presents the new Hermosa Tile, and shows the colors in which it may be obtained. Issued by American Encaustic Tiling Company, Ltd.

FLEXWOOD FOR FINE WOOD PANELING

138 . . . A complete line of standard and deluxe pliable cabinet woods for direct wall application is illustrated in the Flexwood booklet issued by the United States Plywood Co., Inc. A. I. A. File 19-E-5 or 28-C.

THE BOSSERT STAINLESS HYDROCRAT

139 . . . This Enduro stainless steel "successor to the sink" is described in an attractive booklet primarily intended for consumers, but also of interest to architects. Space economies, utility features, and construction details are described in relation to the complete line. Issued by The Bossert Corporation.

TRIPLE PURPOSE OIL-BURNING BOILER

140 . . . In this 8-page folder the Heater division, Motor Wheel Corporation, presents its Type 95 Boiler with self-contained oil burner of natural draft type. Boiler is adapted to steam or hot water heating and to supply large quantities of domestic hot water; it is of steel construction with vertical flues. Ratings are given for each condition of use. A. I. A. File 30c14.

IDEAL HEATING FOR LARGE BUILDINGS

141 . . . In this useful 12 page booklet the various products of the American Radiator Company which may be used in the design of heating systems for large buildings are brought together for easy reference. Products include large boilers of all types, radiation and fittings. Recommended and maximum outputs of boilers are given to simplify selection. A. I. A. File 30c1; dated.

MANUAL ON M-W WEATHER CONTROL UNITS

142 . . . This 12 page manual covers M-W Weather Control Units, which are complete oil burning, heating, humidifying and air circulating systems of unit construction. Operating characteristics, blower data, a code for the installation of forced air heating systems and specifications are included. Issued by Motor Wheel Corporation.

AUTOMATIC OIL BURNING WATER HEATER

143 . . . The M-W Water Heater made by the Heater Division, Motor Wheel Corporation, is described in this six page folder, A. I. A. File 29-D-2. The unit has a self-contained natural draft oil burner and can be used with or without a storage tank for reserve hot water.

RCA CENTRALIZED RADIO SYSTEM

144 . . . Two basic types of centralized radio control systems are described in this specification manual and file folder for architects. The AF (audio frequency) system has a central receiving unit with controlled distribution to a multiplicity of reproducers. The RF (radio frequency) or Antenaplex system provides a single antenna for a multiplicity of separate receivers. Comprises a series of booklets illustrating and describing the component elements, enclosed in a file folder. Issued by RCA Victor Company, Inc. File 31-i-6.

THE NEW ANDERSON CASEMENT WINDOW

145 . . . This 6 page folder from the Anderson Frame Corporation describes their new complete wood casement window units which include frame, sash, hardware, inside aluminum framed screens, removable double glazing sash, bronze weatherstripping—all factory fitted and primed. Three inch scale details and table of sizes are given. A. I. A. File 16-B-2.

SHEETROCK PANELWOOD

146 . . . This attractively prepared 8 page booklet describes paneling made of Sheetrock factory veneered with wood, and gives all information needed by the architect in using this new type of wall facing material. Issued by United States Gypsum Company.

INTERIOR EQUIPMENT FOR DIEBOLD SAFES

147 . . . This new catalog showing various units for the interior fitting of

NO POSTAGE REQUIRED ON THIS CARD

AMERICAN ARCHITECT — November, 1932
New York City

Please have the following catalogs reviewed in this issue sent to me.

Numbers .....

.....

• I also desire further information about the new products described in this month's "New Materials and Equipment." . . (See pages immediately following this insert)

Numbers .....

• I would like to have catalogs and information concerning the following products advertised in this issue. (Write page number or name).....

.....

Name .....

Firm name .....

Address .....

City .....

Occupation .....

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These NEW Catalogs may be obtained through AMERICAN ARCHITECT

Diebold Safes has been issued to supersede prior catalogs, and includes a number of new units. A series of drawings suggests logical arrangements for batteries of safes. Issued by Diebold Safe and Lock Company.

Improved Construction Details for Terra Cotta

148 . . . In this file folder (A. I. A. File 9) Federal Seaboard Terra Cotta Corporation features the use of their patented metal seepage bar in horizontal or nearly horizontal wash surfaces, as a means of providing an effective water seal. Descriptions of their flush corrugated joint and tuck-pointing lock are included.

Westinghouse Commercial Lighting Equipment

149 . . . A complete line of lighting devices for use in commercial buildings is described in this useful 44 page catalog issued by Westinghouse Electric & Manufacturing Company. Included are the new Magnalux luminaries, their new dual purpose ultra-violet luminaires, and the new low cost Wesco hangers. Each unit is illustrated and a description with specifications and applications is given. Dated: A. I. A. File 31-F-232.

Micarta—A Decorative Material for Buildings

150 . . . Illustrated in full colors, and containing a set of color charts showing Micarta in wood, marble, tapestry and conventional designs and plain colors. this 24 page brochure suggests the manifold ways in which Micarta may serve as a building and decorative material. Information is given on the various recommended methods of installation. Colors are classified according to the Munsell scale. Color fastness and resistance to heat and chemicals are accurately stated according to laboratory tests. Issued by Westinghouse Electric and Manufacturing Company. A. I. A. File 19-F.

Westinghouse Industrial Lighting Equipment

151 . . . All types of lighting units and accessories for industrial lighting purposes are presented in this well organized and useful 64 page catalog of the Westinghouse Electric and Manufacturing Company. Tables are given showing proper lighting intensities for various types of industrial work, with a short cut method of estimating the units required for a given number of foot-candles at the working plane. Dated A. I. A. File 31-F-233.

The Inside Story of Bank Protection

152 . . . This attractively printed brochure describes the functions of A. D. T. Central Station Services in the protection of banks and bankers. It shows the need for various types of protection, briefly describes the services offered and tells how they work.

Planning for Telephones in Buildings

153 . . . Here is a permanent reference manual of 74 pages covering every phase of the installation of raceways for telephone circuits in large buildings. It is a companion document to "Planning for Home Telephone Conveniences." Both are invaluable to the practising architect. Published by American Telephone and Telegraph Company for its subsidiaries.

Grinnell "Junior" Sprinkler System

154 . . . A simple, low cost a easily installed sprinkler system for the basement of homes and for special areas needing protection in other buildings is fully presented in an Archietcts' Reference Bulletin prepared for the Grinnel Company. All necessary technical and use information is included. A. I. A. File 29-E.

Trainloads of Happiness

155 . . . This twenty-four page booklet describes in laymen's terms the manufacture and operation of Majestic Refrigerators, explaining each feature of the assembly in a clear and interesting manner. Issued by Grigsby-Grunow Co.

How to Make Concrete Flawlessly Smooth at Low Cost

156 . . . A special form of Douglas Fir Plywood ⅝-inch thick for use in concrete form work is fully described in this 8 page Douglas Fir Construction Bulletin A. I. A. File 4-D-2. Complete technical and use data are included. Issued by Douglas Fir Plywood Manufacturers.

Bryant Hospital Signal Devices

157 . . . This 50 page catalog lists and describes a comprehensive line of switches, signals, annunciators, paging systems, elapsed time recorders and other similar devices used in hospitals and institutions. List prices are given; also wiring diagrams and other essential use data. Issued by the Bryant Electric Company. A. I. A. File 31-i-41.

Cabinet Equipment for Kitchens and Pantries

158 . . . In this four-color catalog and portfolio the units comprising the Kitchen Maid line of wood cabinets for kitchens, pantries, laundries and other domestic areas are fully illustrated and the special features described. A group of single sheet drawings at ½" and ¼" scale are included for use by draftsmen. Issued by the Kitchen Maid Corporation. Dated; A. I. A. File 35-C-12.

Architect's Manual on Kirsch Drapery Hardware

159 . . . Featuring the Kirsch Bild-On Brackets for steel casement windows as a standard means of attaching all types of window accessories and hardware, this 32 page manual also covers a variety of related devices. Fully illustrated and units clearly described according to conditions of use. Issued by Kirsch Company. A. I. A. File 28-D-1.

Parker Innerseal Fittings for Copper Plumbing

160 . . . Parker Innerseal Fittings, featuring the color band which automatically indicates the proper heat for soldering, are described in this 44 page catalog, which gives complete design and engineering data, instuctions for correct installation, and list prices. Issued by Parker Appliance Company. A. I. A. File 29-B-4.

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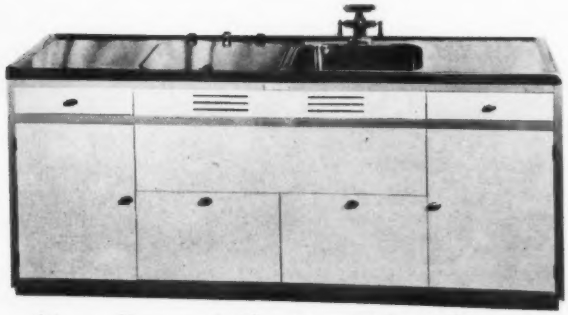
New Materials and Equipment

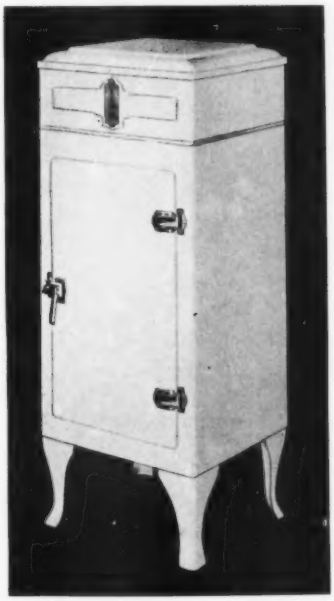
BRIEF REVIEWS OF MANUFACTURERS' ANNOUNCEMENTS
TO KEEP THE ARCHITECT INFORMED OF NEW PRODUCTS



New General Electric Dishwashers

137M A new line of General Electric dishwashers, including sink or combination sink units, with or without cabinets, and either floor or leg-mounted models has been announced. The standard dishwashing unit employed will handle in one washing a complete dinner service for eight people. An automatic control mechanism is provided. Trays are rubber coated to provide a safe cushion for dishes. Standard models have stainless metal tops; but all models may be obtained with tops of stainless vitreous enamel in white or color.

New Junior G-E Refrigerator



138M Announcement of a new low-priced secondary line of electric refrigerators of conventional design has been made by General Electric Company, Cleveland, to be known as the General Electric Junior. Three sizes are offered, with storage capacities of 4, 5 and 7 cubic feet, respectively. List price of the 5-foot model is $135. A standard one-year guarantee applies to these conventional models. The Monitor Top refrigerator line will continue to serve the demand for highest quality refrigerators, according to the announcement.

Seamless Sheet Covered Toilet Seat

139M American Rubber Products Company, Detroit, announce a new seamless sheet covered toilet seat on which the covering is applied by a patented process over a round edged, hard surfaced water-proof composition core. The product is known as the Bonalite seat and is available in white, black and a variety of colors. A standard white closed front seat with cover, hinger and rubbers lists at $5.20.

New Size Magazine Boiler

140M American Radiator Company has announced a companion to their No. 25 Magazine Boiler to be known as the No. 15 Ideal Magazine Boiler. The new unit is somewhat smaller than No. 25. Both use solid fuels.

Pantry Sinks of Stainless Steel

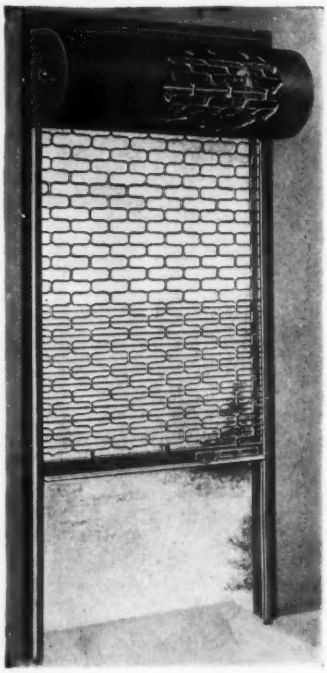
141M The use of 18-8 chromium nickel steel as a standard material for corrosion resisting and high temperature equipment has definitely established its value for dometic purposes, particularly for kitchen and pantry sinks, according to Electro Metallurgical Company, New York, which is developing the use of this metal for household equipment. Stainless steel of 18-8 proportions, it is said, has a silvery surface which no food acids can tarnish or corrode, and which can be cleaned with ordinary soap and water. Pantry and kitchen sinks of this metal are available in standard models or they can be custom-built to meet specific space requirements.

New Plywood for Concrete Forms

142M A specially fabricated and waterproofed plywood for concrete form work is offered by Douglas Fir Plywood Manufacturers as an economical means of reducing form work and finishing costs. Forms made of this material are said to stand seven to ten re-uses.

XUM

New Rolling Grilles and Gates



143M An ingenious adaptation of the familiar rolling steel doors and shutters has been developed in the form of rolling grilles by Cornell Iron Works, Long Island City, New York. The Cornell Rolling Grille is designed to provide safety against tresspass while admitting light, air and vision. Recommended for store fronts, gateways, entrances, market stalls, etc. Operating mechanism is counter balanced. Grilles are standard in rolled and pressed steel, but they may also be procured from the manufacturer in bronze, rustless steel, or aluminum rods, and links.

New Small Stoker for Intermediate Loads

144M Combustion Engineering Corporation, New York, has recently placed on the market a new underfeed stoker for application to heating and industrial boilers of approximately 40 to 150 developed boiler horsepower. Its fuel feeding mechanism is of the ram or plunger type, identical in principle to their Type E Stoker which has been in use for nearly 30 years. Rugged construction, the use of roller bearings, an integral fan, and complete control equipment are features.

New Oil Burning Cabinet Heater

145M Two radiant type, and three circulating type Cabinet Heaters have been placed in production by Motor Wheel Corporation, Lansing, Michigan. All contain the M-W natural draft oil burner, with a new burner stabilizer. These space heaters are finished in black or walnut porcelain enamel for use in utility or living areas, according to model.

Four New Paint Products Announced

146M The Glidden Company, Cleveland, has announced the following additions to their line of paint products: Gliddenspar, a bakelite and synthetic base varnish, resistant to extreme exposure, water and acid conditions, with unusual filling properties; Q. D. Ripolin, a quick drying Ripolin enamel in gloss and semi-gloss white; Base-Coat, a scientifically correct primer for house painting; Speed-Wall, a semi-gloss finish that dries in four hours, for woodwork and walls.

New Monel Metal Cabinet Sinks

147M The growing trend towards the use of cabinet sinks in large as well as small kitchens has resulted in the development of a line of monel metal models in ten double drainboard and one single drainboard sizes by the International Nickel Company. In style the new cabinet sinks follow in a general fashion that of the "Straitline" self-supporting sink models recently announced by the company, and are made of the same gauge metal. Under portions, including bowl and drainboards, are backed up with sound deadening material. Sizes of the double drainboard models range from 60 inches to 117 inches in length. The single drainboard models are 48 inches in length and are furnished in right and left-hand drainboard types. All models are 25 inches wide. Bowls are of solid one-piece construction.

Armstrong Announces Linoleum Underlay

148M A new product—Armstrong's Linoleum Underlay—designed to eliminate board markings or unevenness in the subfloor showing through the finished linoleum floor, is announced by the Armstrong Cork Company, of Lancaster, Pennsylvania. This material is a dense, hard composition wood fibre board, ⅛-inch thick, weighing approximately three-quarters of a pound per square foot. According to the announcement, it will not crack, split, or splinter, and its construction is such that it is highly resistant to moisture and shows very little expansion and contraction with humidity changes. For this reason, it is especially suited for application over wood subfloors as a base for linoleum. It also will be used as a backing for Linowall, the new Armstrong wall covering product.

New Kohler Boiler

149M A new automatic firing boiler designed especially to burn oil and gas fuels more economically has been announced by the Kohler Company, Kohler, Wis. Intended to meet the demand for an oil and conversion gas firing boiler for residences, stores, small apartment buildings, etc.

New Construction for Metal Partitions

150M The metal partitions of F. C. and G. M. Mills Company, Cleveland, Ohio, are now assembled with mortise and tenon instead of with bolts and screws and electric welds. When posts have been fastened to the floor, partitions can be erected with a hammer.

Steel Folding Chair

151M A new steel folding chair suitable for institutional, commercial and general public seating requirements has been introduced by the Howell Company, Geneva, Ill. It comes in six enamel finishes with Dupont Fabricoid, velour or tapestry upholstery.

NATIONAL COPPER-STEEL PIPE

Introduced more than twenty years ago, NATIONAL Copper-Steel Pipe was the first copper-bearing steel pipe offered to the industry. All that was then indicated as to its special durability under atmospheric exposure, has been abundantly proved in actual use in all sections of the country. This special NATIONAL product embodies all the merits for which NATIONAL Pipe in general is distinguished, and in addition, extra long life where alternate wet and dry conditions prevail.

LOOK FOR THE GREEN COLOR!

National Copper-Steel Pipe is marked as follows: Black Pipe—Smaller sizes colored green. Larger sizes, two green stripes running lengthwise. Galvanized Pipe—All sizes, two green stripes running lengthwise.

Especially recommended for **SOIL, WASTE VENT LINES** *and* **RAIN LEADERS** *in all types of buildings*

NATIONAL TUBE COMPANY - PITTSBURGH, PA.

Subsidiary of United States Steel Corporation

XUM

Use BLOX-ON-END flooring for factory remodeling

It's easily laid over any type of sub-floor!

SINCE 1916, millions of square feet of Bloxonend have been laid in factories, mills, warehouses, printing establishments and industrial plants of all kinds—where it is subjected to heavy trucking and other daily gruelling wear, yet today these floors remain smooth and substantial.

This original strip type block flooring is ideal for remodeling—laid over old wood or concrete floors with only slight interruption to daily operations. The small tough blocks are dovetailed onto substantial baseboards and the built-up sections are joined with heavy wood splines for a degree of smoothness and durability not equalled by any other floor. Write for descriptive literature.

Carter Bloxonend Flooring Co.

General Offices, Kansas City, Mo.

BLOX-ON-END FLOORING

Lay's Smooth Stay's Smooth

Comes in 8 ft. built-up lengths —the end grain UP

Small blocks of Yellow Pine dovetailed onto Baseboards.

What Architects Are Talking About

(*Continued from page* 31)

The architect will select the successful contractors for each trade or combination of trades, including the contractor who is to act as the general contractor.

Such a plan maintained by the responsible general contractors and sub-contractors is expected to be a constructive move for the elimination of bid shopping and bid peddling. This plan was approved at a joint meeting of the Detroit Chapter of the American Institute of Architects, the Michigan Society of Architects, the Detroit Chapter of the Associated General Contractors of America and the Michigan Society of Building Crafts. The latter organization is composed of subcontractors' associations exclusively.

JEAN François Meunier of Paris, winner of awards in several French architectural competitions and of the Stillman prize at the Ecole des Beaux Arts, has been named the Delano and Aldrich Travelling Scholar by the Committee on Education of the American Institute of Architects. The fellowship, established by William A. Delano and Chester H. Aldrich of New York, enables a foreign architect, sculptor, or painter, or a student in one or more of these arts, to spend a year of travel in the United States. Meunier will study American architecture and building methods.

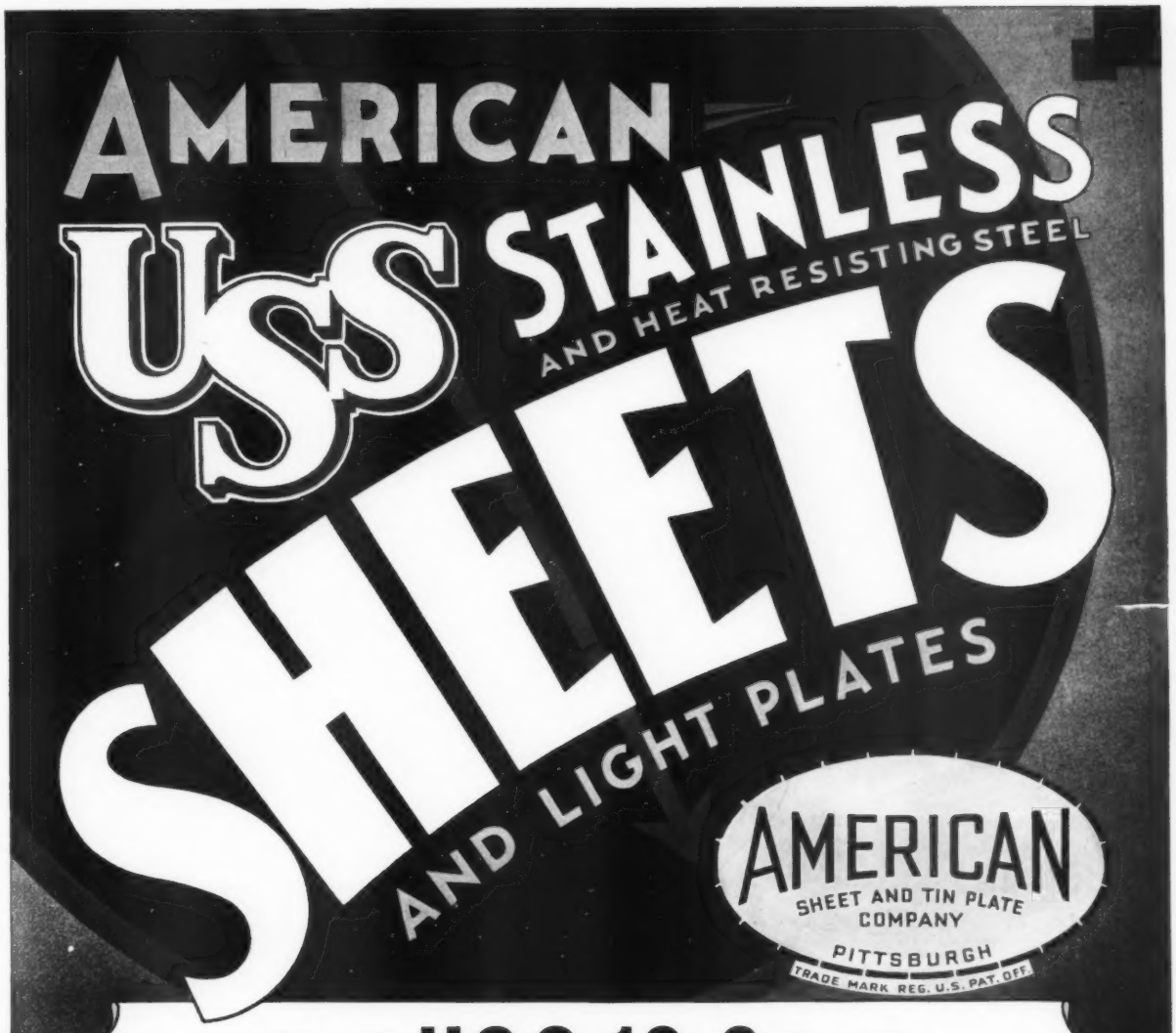
Meunier is a graduate of the Ecole des Beaux Arts. He has been chosen twice among the ten final competitors for the Prix de Rome, and he expects to compete again next spring. He is the third winner of the Delano and Aldrich scholarship.

STAINLESS steel, instead of the conventional bronze of the past, will be used to make the plaques for the American Institute of Steel Construction to decorate the three bridges judged to be the most beautiful erected in the United States and Canada during the past year. The plaques have been donated by the General Alloys Company of Boston. They will be the same in general design as those used by the American Institute of Steel Construction in previous bridge awards. The type of decoration, however, will be new.

The General Alloys Company have developed what is known as KloiZenay, a colored glass poured on the casting so that the silica of the glass fuses with the metal. The stainless steel is heated to 2400 degrees Fahrenheit so that it is plastic when the glass is poured on its surface.

ON page 66 of AMERICAN ARCHITECT, issue of September 1932, the construction data stated that the floors of the beach house of George G. Whitelaw are of wood. The under floors are of wood, but it is obvious in the illustration of the rooms shown on that page that the finished floors are of linoleum.

THE Thirteenth Biennial Exhibition of Contemporary American Oil Paintings will be held at the Corcoran Gallery of Art, Washington, D. C. This exhibition will open December 4, 1932, and close on January 15.



USS 18-8

is produced from Chromium-Nickel Alloy Steel for a wide range of applications. This alloy offers the widest adaptability of all the grades of the U S S series, for uses in which beauty, appearance, and unusual physical properties are important considerations—whether from the standpoint of utility or ornamentation.

Chromium-Nickel Steels
Austenitic
USS 18-8
USS 18-12
USS 25-12

AMERICAN USS Stainless and Heat Resisting Steel Sheets and Light Plates are produced by this Company in a moderate range of compositions, as indicated—and a number of finishes. Your selection of these products to meet particular requirements may be made with the assistance of our technologists, who will be pleased to serve you. Write for information.

USS Chromium-Nickel Alloy Steels are produced under licenses of the Chemical Foundation, Inc., New York; and Fried. Krupp A. G. of Germany.

Chromium-Alloy Steels
Ferritic
USS 12
USS 17
USS 27

This Company manufactures Black and Galvanized Sheets, Formed Roofing and Siding Products, Special Sheets, Tin and Terne Plates for all purposes

American Sheet and Tin Plate Company
GENERAL OFFICES: Frick Building, PITTSBURGH, PA.
SUBSIDIARY OF UNITED STATES STEEL CORPORATION

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES:
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Oil Well Supply Company
The Lorain Steel Company
Tennessee Coal, Iron & R.R. Company
Universal Atlas Cement Company

Pacific Coast Distributors—Columbia Steel Company, San Francisco, Calif.
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XUM

STATE COLLEGE OF AGRICULTURE AND APPLIED SCIENCE
LIBRARY
NOV 10 1932
MANHATTAN
KANSAS

Professional Fee for the Architect

(*Continued from page* 13)

(3) An Institution for the Blind

	Estimated	Actual Cost
Building	$886,000	$1,017,159.29
To take	2 to 3 years	32 months
Fee	18,000 to 25,000	25,000.00
Draughting	25,000	24,469.47
Engineers	9,000	9,910.99
Incidentals	500	1,118.72
Clerks of Works	4,000	10,627.50
Advice on grounds		889.35

(4) War Housing

Buildings	$3,500,000	$4,500,000.00
Fee		13,000.00
Draughting		23,941.75
Domestic Engineers	no	2,000.00
Incidentals	estimate	10,031.74
Clerk of the works	made	6,647.20
Advice on grounds		125.00

(Note—The Government employed and paid in addition a landscape architect and an engineer for streets and utilities.)

(5) A School

Building	$80,000	$91,516.78
To take	11 months	18 months
Fee	2,000	2,000.00
Draughting	3,000	3,357.77
Engineers	950	942.75
Incidentals	300	354.65
Clerk of the works	500	471.35

(6) A Telephone Exchange

Building	$370,192	$436,899.99‡
To take	15 months	20 months
Fee	8,000	8,000.00
Draughting	9,000	10,401.41
Engineers	4,500	5,925.99
Incidentals	500	862.23
Clerk of Works	2,600	4,000.00

(‡—War Time contract—accounts for increased cost.)

(7) A Carved Wooden Doorway

The work	$2,700	$2,913.00
Fee		450.00
Draughting		49.26
Incidentals		.10

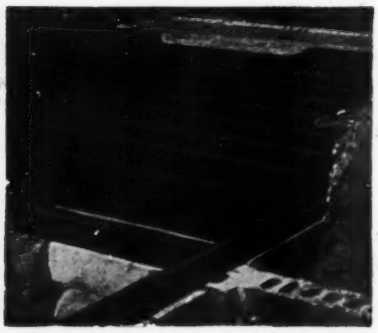
(Fee and draughting actual cost represent architect's gross commission.)

In all the above the fee is fixed. All the other expenses are estimated but not guaranteed.

In all these examples there are but two items which, under the A. I. A. schedule would be set against a commission, the fee and the draughting doubled; all other expenses the owner would pay anyway. No. 1 was 5%; No. 2—10%; No. 3—5%; No. 4—¾%; No. 5—6%; No. 6—4½%; No. 7—17%. It will be seen therefore that in all the larger jobs the cost to the owner is lower than the customary commission; that on the moderate cost school is about the same; that on the carved doorway is a very high per cent, and that on Government Housing a very low per cent. It is interesting to note that the Telephone Building which cost $66,000 more than the estimate, due to the increase in prices during the war, would have yielded the architect $3,600 had he been working on a commission basis. In every case however the fee was net profit, it was assured and without risk, and satisfactory to owner and architect.

From the point of view of the architect there is the inestimable value of an assured income; each job carries its own expenses and pays its monthly fee. Study of plans to assure the greatest economy is encouraged, and is, quite rightly, paid for by the owner. No owner will object to paying for a month's work of three draughtsmen, resulting in economies ten times the amount of their salaries. Both architect and owner are relieved to feel that the carelessness of the architect which results in needless cost is not rewarded, and that conscientious study resulting in economy is not penalized. It is also very satisfactory to architect and owner to feel that if a decision is to be made between materials or methods involving different expenditures it will have no effect whatsoever on the architect's fee.

No one who has ever tried this method would ever want to return to the commission basis.



Creosote Oil Prevents Decay and Termite Damage

TERMITES DESTROY FOUNDATION TIMBERS

Permanent protection is assured by using timber from our plants, pressure treated with pure creosote oil.

AYER & LORD TIE CO. Chicago, Ill. **CENTURY WOOD PRESERVING CO.** Pittsburgh, Pa.

NATIONAL LUMBER & CREOSOTING CO.
Texarkana, Ark.-Tex.

AFFILIATES OF
THE WOOD PRESERVING CORPORATION
Koppers Building » » » » » Pittsburgh, Pa.

Nationwide Service — 18 Sales Offices — 21 Treating Plants

FIRST PRESBYTERIAN CHURCH, Rochester, Minnesota . . . Ellerbe & Co., St. Paul, Architects and Engineers

MULTI-HEAT

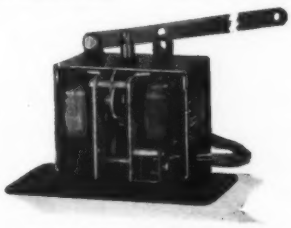
FROM A *single* WARM AIR SYSTEM

Automatic Temperature Where Needed and When Needed

WITH THE *Modutrol System* OF ZONE CONTROL

ZONE CONTROL not only automatically provides desired temperature WHERE it is needed, but WHEN it is needed as well. It coordinates the source of heat with the individual demands of the various zones or sections to maintain the desired temperature in each as governed by time, occupancy, exposure and weather conditions, resulting in pronounced economy and efficiency for old buildings or new, large or small.

In the First Presbyterian Church, Rochester, The Modutrol System enables a single warm air heating plant to automatically maintain the constant day and night temperatures in sections where needed, while other zones are supplied with heat only when in use. . . . Only the Modutrol System can meet any or all temperature control problems. There is a tailor made system for every job. Minneapolis-Honeywell Regulator Company. Executive Offices, 2738 Fourth Avenue South, Minneapolis, Minnesota. Factories: Minneapolis, also Elkhart and Wabash, Indiana.



The sturdy Modutrol Motor regulates the mixing dampers supplying fresh heated or unheated air as called for by the individual zone thermostat.

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MINNEAPOLIS-HONEYWELL

Control Systems

XUM

These kitchen sinks are **BEAUTIFUL** *...and they're* **PRACTICAL,** *too*

8 POINTS OF DISTINCTION
JUSTIFY YOUR SPECIFICATION OF MONEL METAL KITCHEN SINKS

1. Rich, lustrous beauty...with a satiny, glass-smooth surface.
2. Neutral silver tone that harmonizes with any kitchen color scheme.
3. Rust-proof...highly resistant to corrosion...easy to clean.
4. Solid metal...no coating to chip, crack or wear off...strong as steel.
5. Surfaces give cushioning effect that protects dishes against breakage.
6. 31% more work space than ordinary sinks of same nominal sizes.
7. Standardized sizes and models for every kitchen.
8. Prices within reach of every family purse.

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

A HIGH NICKEL ALLOY
MONEL METAL
NICKEL ALLOYS LOOK BETTER LONGER

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

THE CUTLER MAIL CHUTE

Is backed by—

An experience of fifty years.

A factory equipped and operated for our own work exclusively.

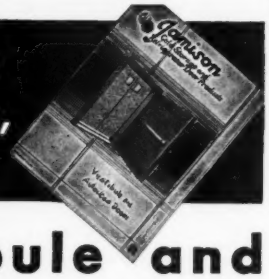
A force of experienced erectors in the field.

A determination to keep our product and service up to the highest possible standard.

Correspondence invited

CUTLER MAIL CHUTE CO.
GENERAL OFFICES AND FACTORY
ROCHESTER, N. Y.

Announcing Bulletin 107, on



Vestibule and Auto Close Doors

OUR CATALOGUE IS FILED IN SWEET'S

—shows why Vestibule doors should be installed at every busy doorway
—the exact type to fit your need
—standard sizes and hardware available
—describes many Stevenson advantages

Stevenson Vestibule Door has saved more money than any other door in the cold storage industry.

A bulletin which you should have on hand. Sent on request. Please use your letterhead.

Jamison Cold Storage Door Co.
Oldest and Largest Makers of Cold Storage Doors
Jamison, Stevenson & Victor Doors
Hagerstown, Maryland U. S. A.

Jamison & Stevenson Cold Storage Doors

BRANCH OFFICES: NEW YORK, CHICAGO, CHESTER, PA.... **AGENTS and DISTRIBUTORS:** DETROIT . . ST. LOUIS . . ATLANTA . . MINNEAPOLIS OMAHA. . . SALT LAKE CITY . . LOS ANGELES . . SAN FRANCISCO . . SEATTLE
FOREIGN: LONDON, HONOLULU and JAPAN

Direct Paging

FAR SUPERIOR TO CODED CALLS
Because :—

PRIVATE OFFICE

FACTORY

GENERAL OFFICE

SHIPPING ROOM

LABORATORY

LUNCH ROOM

1. It can call anybody, even visitors.
2. It tells "Where to go" and "What to do."
3. It is sure. Everyone responds to his spoken name.
4. It does not annoy. The human voice is less nerve-wracking than bells or buzzers.
5. It is always intelligible. Volume from any loud speaker may be adjusted to the needs of its location. Directional or non-directional speakers may be used as conditions demand.
6. It can be used to provide entertainment.

Stromberg-Carlson Telephone Mfg. Co.
Rochester, N. Y.

Stromberg-Carlson

PLATE XV

THE

MODERNISTIC MOVEMENT

The Detroit & Pontiac Investment Building, Pontiac, Mich., is thoroughly modern in design. It was planned by Robert O. Derrick, Inc., of Detroit. This page features one of the unusual entrances—original in form and strong in the character of Verde Antique marble.

VERMONT MARBLE COMPANY—PROCTOR, VT.

Branches in the larger cities

See Sweet's Catalog for Specifications and Other Data

VERMONT MARBLE

XUM

Houses For Children

(*Continued from page* 40)

In bedrooms, playrooms or nurseries for children, we need shallow closets with shelves, for keeping toys. I say shallow because shelves in the ordinary clothes closet are not satisfactory. They are too deep. Toys get lost at the back, and beside, it is hard for children to get at them. Since modern educators taboo the old-fashioned toy box, we must have shelves, and if they were built in a shallow closet, so youngsters could get at their own toys and put them back, it would be a tremendous help.

WHEN planning a bathroom off the children's room, a low toilet and low lavatory are particularly useful in encouraging self-help and independence. Otherwise a bathroom of adult proportions becomes cluttered with foot stools, baby-toilet-seat contraptions or little ladders.

Also, regarding bathrooms for adults or children, I wonder why architects do not provide a little cupboard to hold the necessary can of bathroom scouring powder, disinfectant, bathroom cleaning cloth, and toilet brush (a drain for the brush would be practical, because it is usually put away wet). To have cleaning materials right in the bathroom is a great convenience.

Why is it, I wonder, that suburban homes seldom have a place for storing children's outdoor playthings. Unless there is a special playhouse for children, these big toys must be kept in the cellar or in the garage, usually the latter, because it is on ground level. Now the average two-car garage with two cars parked in it is a pretty crowded place, and that leaves the only available storage space at the sides or the back against the wall. In either case, you can't rely on children to place their toys safely against walls, with the result that most suburban parents know the tragedy of a bicycle with a crushed wheel, because someone drove the car too rapidly into the dark garage, or a sadly battered fire engine run over in the driveway. A separate shed or compartment in the garage would be ideal for bicycles, sleds, etc.

May I suggest, for children's rooms, an electric light switch at the door, placed low, so children can reach it?

I often wonder, in regard to placing electric light wall fixtures, whether architects are governed by particular rules or ideas. After considering wall lights in arranging furniture and hanging pictures in five different suburban houses, it seems to me that the placing of these fixtures is somewhat haphazard. I don't know where to suggest placing them—but certainly not on the big expanses of wall space likely to be needed in furniture groupings.

My last suggestion, perhaps trivial, concerns, the placing of outdoor faucets for connecting the hose. In most houses, there are two or three faucets against the foundation. Now if there is deep, full foundation planting, connecting a hose means pushing one's way through sharp pines, prickly blue spruces or thorny rose bushes. It is certainly irritating to be torn or scratched when connecting a hose, especially when a little foresight in placing connections might avoid this.

The entry as originally constructed.

Consult SWEET'S
Volume A
Pages 1224-1225 for
Cast-iron Veranda Designs
Volume D
Pages 5035-5045 for
Exterior Lighting Fixtures

. . . . . Commissions to be Awarded . . .

The same entry after a Smyser-Royer cast iron veranda was installed.

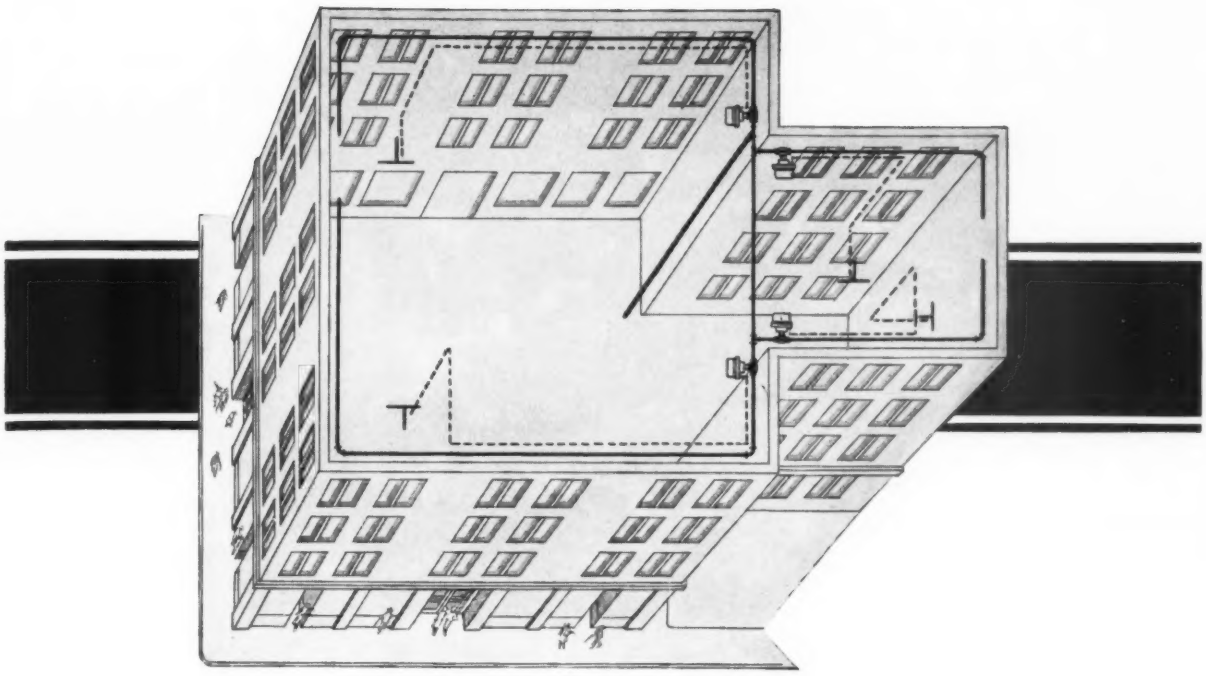
The transformation pictured here suggests a world of possibilities in remodeling work to discerning architects. Otherwise barren entries when framed with artistic cast iron verandas, become quaintly charming and inviting.

Leading architects and builders everywhere are taking advantage of the returning vogue for cast iron verandas and are executing many profitable commissions. America's foremost architects have been specifying Smyser-Royer castings for almost a century.

•

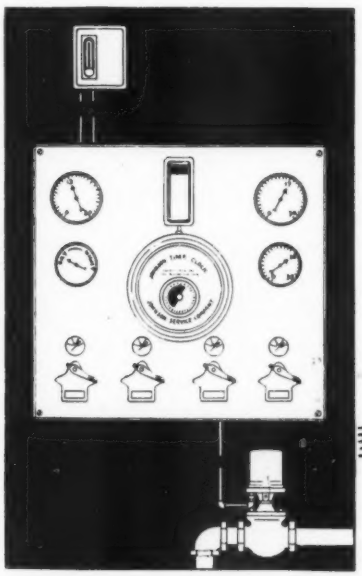
SMYSER-ROYER CO.

Main Office and Works, YORK, PA.—Philadelphia Office, 1700 WALNUT ST.



ZONE CONTROL

JOHNSON *Automatic Temperature Regulation Applied to Zone Control*



● Day and Night Thermostats, Clocks, and Switches may be arranged in a wide variety of combinations for the control of branch heating mains serving various sections of the building. Differential thermostats are available to maintain proper relationship between out-door and radiator temperatures.

JOHNSON SERVICE COMPANY

Main Office & Factory, Milwaukee, Wis. Branch Offices in all Principal Cities

JOHNSON

The illustration suggests Johnson apparatus for a typical Zone Control System. Control panel applies to a building having four zones. Zone control valve and dual type thermostat for day and night operation are indicated for one of the zones.

XUM

Approximate Itemized Costs

Removal of [illegible] and [illegible] [illegible]
Removal of bay windows [illegible]
Addition of vestibule and closet [illegible]
Panel door, fixtures and service [illegible]
Iron railings [illegible]
Side porch addition [illegible]
Five new windows and blinds [illegible]
Repairing roof, flashing, etc., and painting and staining new roof [illegible]
Change of gable dormer windows, and new shingling [illegible]

Above: the original house, a typical Victorian dwelling prototypes of which are in every city. It seems scarcely possible that with comparatively few alterations it could have become the attractive, hospitable home in the Colonial setting shown at the left

Modernizing at Small Cost

By James Renwick Thomson, Architect

IT IS amazing what can be done in modernizing, at comparatively low cost, a house of forty or fifty or more years ago, which is well built, but ugly as to exterior and antiquated about plumbing, heating, and lighting arrangement. In architecture, as in all the arts, dignity is expressed by simplicity in line and decoration and adaptability to practical use.

The house shown at the top of the page, which was given me to modernize, had many of the characteristics of the gay nineties, a period addicted to over-elaboration, rather than simplicity. Then, dot the landscape from Florida to Maine, these houses, with their front gardens, surrounding galleries, strange excrescences, and fantastically ornamented timberwork.

The problem of alteration was evidently one of elimination. First, the porches were removed. They not only kept out light and air, but served no useful purpose, being too shallow for lounging. Away went the pork cockle, useless relic of bygone days! The next step in the demolition was the removal of the bay window and other ugly protuberances that cluttered up the still ornate façade, such as the false gables, extending eaves, heavy, overhanging cornices, and other gingerbread ornamentation. The table above shows the cost. A hundred dollars enabled us to make an excellent start.

With the porches and bay window removed, the front gable seemed stilted and extremely high. Having the space where the old porch stood on one side, it was decided to lower the gable. This permitted a new location for the entrance vestibule and the enlargement of the staircase. This was an improvement in the interior and gave space for a much needed coat closet.

Beneath the entrance hall is a small library which formerly opened on the lawn, but now these doors enter a new porch, which was a requirement of the situation. The addition of this porch gives the house a desirable length and makes it appear closer to the ground. Here was the big expense—$650. Much could have been done for the house without [illegible]

A beautiful Colonial doorway has replaced the original nondescript entrance. Flagstone steps with a simple iron railing lead to it

In November Good Housekeeping, James Renwick Thompson, architect, tells how an antiquated old house was given new charm and dignity

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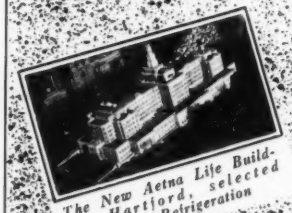

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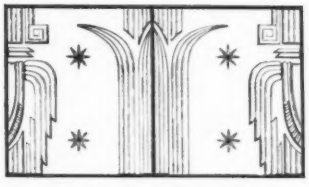
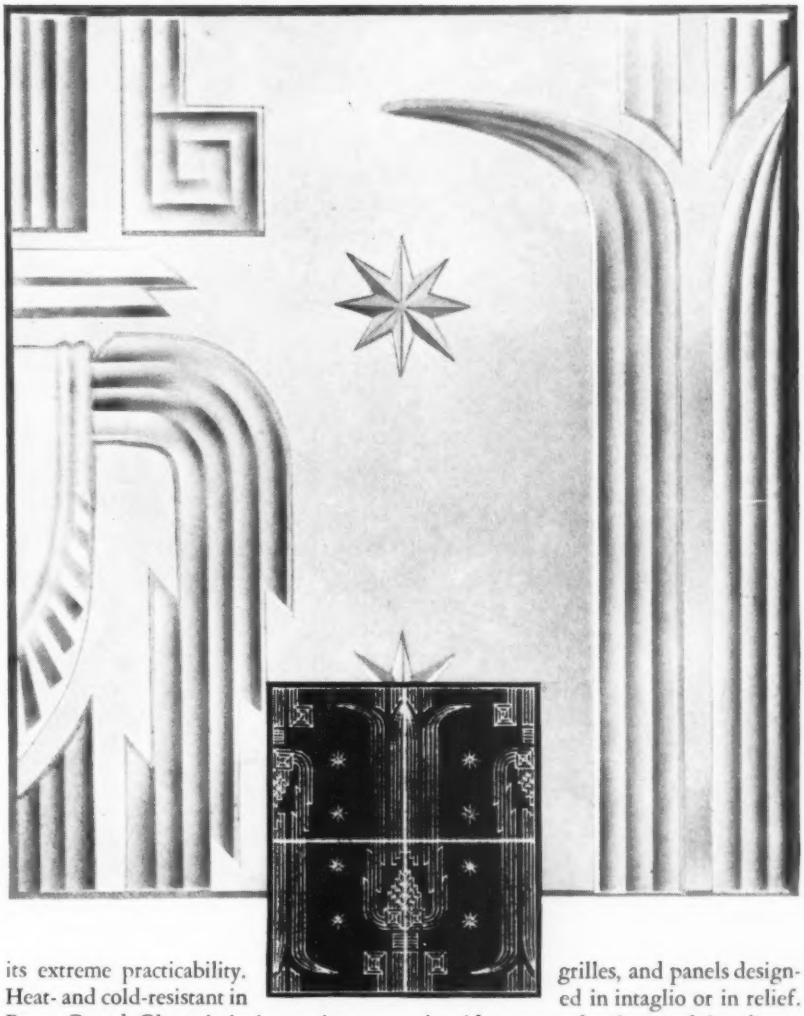
RADIO CITY
chooses this New Architectural Form



Above: Architect's preliminary sketch for Steuben Architectural Glass panels (dustless finish) used as glass panel screen in Foyer No. 9, Theater No. 8, Radio City (Rockefeller Center), N. Y. Photograph at right shows single panel (size 20 1/2" x 23 1/8"; thickness—at edge, 7/16"—of design, 12/16"), while blue print below illustrates assembly of four panels into single unit.

Architects: Reinhard & Hofmeister — Corbett, Harrison & MacMurray — Hood & Fouilhoux.



Architects' drafts show creation of one of several heat-resisting Steuben cast glass installations used in Rockefeller Center

RADIO CITY'S architects have enhanced the decorative scheme of this noted cultural center with the exquisite shapes, transparent coloring and light play of Steuben Cast Glass. They designed and specified Steuben Architectural Glass for several important installations, one of which is shown on this page.

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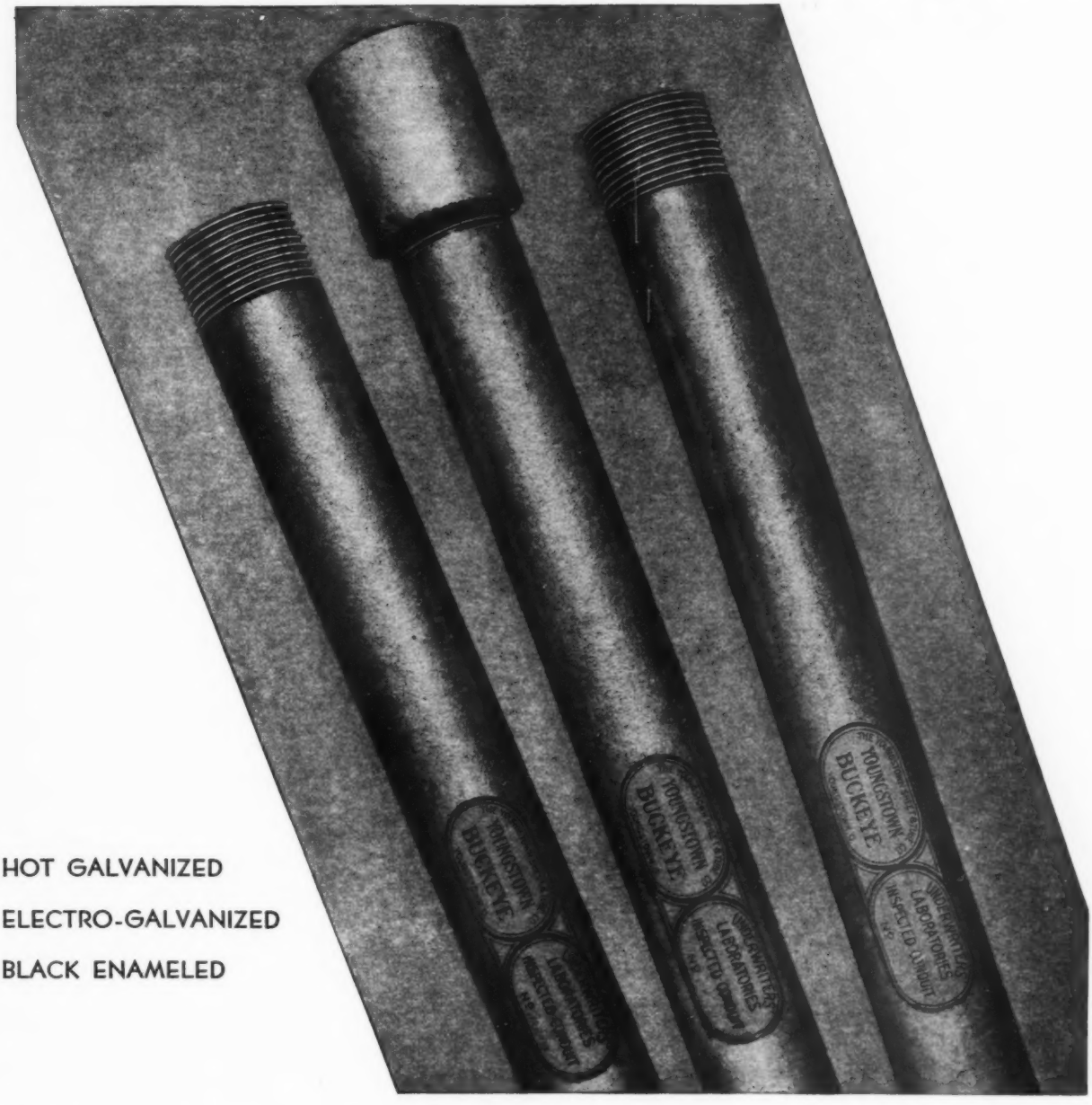

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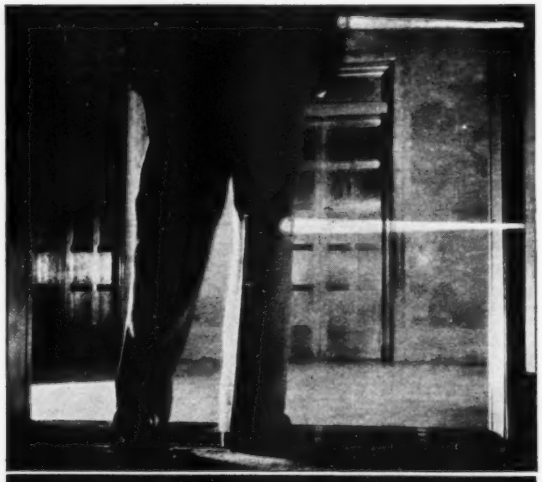

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